# THE IRON AGE

**A Review of the Hardware, Iron, Machinery and Metal Trades.**

**Published every Thursday Morning by David Williams Co., 232-238 William St., New York.**

*Vol. 74: No. 20.* *New York, Thursday, November 17, 1904.* $5.00 a Year, including Postage. Single Copies, 15 Cents.



Library of Congress, Copyright Office, 18 Jul 1905-d, Washington D.C.



Reading Matter Contents.....page 56
Alphabetical Index to Advertisers " 173
Classified List of Advertisers.... " 165
Advertising and Subscription Rates " 172

**"FORSTER" Wood Split Pulley**

Perfect Balance, Light and Strong.

Forster Pulley Works, CUBA, N. Y.

IRON AND STEEL

REPUBLIC IRON & STEEL COMPANY CHICAGO, ILL.

PRODUCTS

**Bristol's Patent Steel Belt Lacing.**

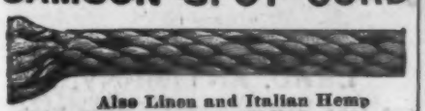
SAVES Time, Belts, Money.

Greatest Strength with Least Metal.

Send for Circulars and Free Samples.

THE BRISTOL CO., Waterbury, Conn.

**SAMSON SPOT CORD**



Also Linen and Italian Hemp Sash Cord.

SAMSON CORDAGE WORKS, Boston, Mass.

**TURNBUCKLES.**

Branch Office, 11 Broadway, New York.
Cleveland City Forge and Iron Co., - Cleveland, O.

MERRILL BROS., 405 Kent Ave., BROOKLYN, N. Y.

**Low Phosphorus Pig.**

PILLING & CRANE, Girard Building, Phila. Farmers' Bank, Pittsb'g. Empire Bldg., New York. Board of Trade, Boston.

Just what you want to know
Just when you want to know it.

See
AMERICAN SHEET & TIN PLATE COMPANY'S
Ad on Page 24

**U.M.C.**

SHORT RANGE

FOR BRUSH AND FIELD

**SHORT RANGE SHOT SHELLS**

are carried in stock by all wide-awake dealers. An entirely new invention producing practically the same velocity and pattern at 25 yards as the regular load at 40 yards. These shells often prevent a choke bored gun from missing or mutilating game at close range. All sportsmen wish to try them.

*Supplied in Arrow and Nitro Club brands only—same price as regular loads.*

The Union Metallic Cartridge Co.,

Agency, 313 Broadway, N. Y., New York. BRIDGEPORT, CONN.

**CAHALL BOILERS** See Page 120

**Capewell Horse Nails**

NEW YORK, PHILADELPHIA, CHICAGO, ST. LOUIS, BOSTON,

Branches:

DETROIT, CINCINNATI, SAN FRANCISCO,

PORTLAND, ORE., BUFFALO, BALTIMORE, NEW ORLEANS, DENVER.

THE CAPEWELL HORSE NAIL CO., Hartford, Conn.

**JENKINS BROS. VALVES**

Every valve bearing the name and Trade Mark shown in cut is sold under the positive guarantee that if it is not perfectly tight, or does not hold steam, oils, acids, water, or other fluids longer than any other valve, it may be returned and money will be refunded.

*Write for booklet,—"Valve Troubles."*

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London.

**"Swedoh" Cold Rolled Steel** is unexcelled for **Drawing and Stamping**

THE AMERICAN TUBE & STAMPING COMPANY

(Water and Rail Delivery) BRIDGEPORT, CONN.


SEE PAGE 26.


**MAGNOLIA METAL.**

Best Anti-Friction Metal for all Machinery Bearings.

Fac-Simile of Bar. Beware of Imitations.

MAGNOLIA METAL CO.,

Owners and Sole Manufacturers, Chicago, Fisher Bldg. 113-115 Bank Street, NEW YORK.

San Francisco, Montreal, Boston and Pittsburg. We manufacture all grades of Babbitt Metals at competitive prices.

THE QUEEN'S RUN FIRE BRICK CO.
High Grade
FIRE BRICK
"QUEEN'S RUN"
"LOCK HAVEN"
"WEST BRANCH"
"KING"
SPECIAL SHAPES
LOCK HAVEN, PA.

BRASS { SHEET ROD WIRE
COPPER { SHEET ROD WIRE
GERMAN SILVER { SHEET ROD WIRE
LOW BRASS. SHEET BRONZE. SEAMLESS BRASS AND COPPER TUBING. BRAZED BRASS AND BRONZE TUBING.

THE PLUME & ATWOOD MFG. CO.,
MANUFACTURERS OF
Sheet and Roll Brass
—AND—
WIRE
PRINTERS' BRASS, JEWELERS' METAL, GERMAN SILVER AND GILDING METAL, COPPER RIVETS AND BURRS.
Pins, Brass Butt Hinges, Jack Chain, Kerosene Burners, Lamps, Lamp Trimmings, &c.
29 MURRAY ST., NEW YORK.
144 HIGH ST., BOSTON.
199 LAKE ST., CHICAGO.
ROLLING MILL: THOMASTON, CONN. | FACTORIES: WATERBURY, CONN.

Randolph-Clowes Co.
Main Office and Mill,
WATERBURY, CONN.
MANUFACTURERS OF
SHEET BRASS & COPPER.
BRAZED BRASS & COPPER TUBES.
SEAMLESS BRASS & COPPER TUBES
TO 36 IN. DIAM.
New York Office, 253 Broadway, Postal Telegraph Building, Room 715.
Chicago Office, 602 Fisher Bldg.

WATERBURY BRASS CO.,
WATERBURY, CONN.
99 John St., New York. Providence, R. I.

Bridgeport Deoxidized Bronze & Metal Co.,
BRIDGEPORT, CONN.
Automobile Castings a Specialty.
High Tensile Strength.
Bronze and Aluminum Alloys.
Write Us.

SCOVILL MFG. CO.,
MANUFACTURERS OF
BRASS,
GERMAN SILVER
Sheets, Rolls, Wire
Rods, Bolts and Tubes,
Brass Shells, Cups, Hinges,
Buttons, Lamp Goods.
Special Brass Goods to Order.
FACTORIES:
WATERBURY, CONN.
DEPOTS
NEW YORK, CHICAGO, BOSTON.

JOHN DAVOL & SONS,
DEALERS IN
COPPER, TIN, SPELTER, LEAD, ANTIMONY.
100 John Street, - New York.

Matthiessen & Hegeler Zinc Co.,
LA SALLE, ILLINOIS.
SMELTERS OF SPELTER
AND MANUFACTURERS OF
SHEET ZINC AND SULPHURIC ACID.
Special Sizes of Zinc cut to order. Rolled Battery Plates.
Selected Plates for Etchers' and Lithographers' use.
Selected Sheets for Paper and Card Makers' use.
Stove and Washboard Blanks.
ZINCS FOR LECLANCHE BATTERY.

Arthur T. Rutter & Co.
256 Broadway,
NEW YORK.
*Small tubing in Brass, Copper, Steel, Aluminum, German Silver, &c. Sheet Brass, Copper and German Silver. Copper, Brass and German Silver Wire. Brazed and Seamless Brass and Copper Tube. Copper and Brass Rod.*

BRASS FOUNDERS FINISHERS J. J. RYAN & CO.
8874 West Monroe St., Chicago.
Best Bronze, Babbitt Metals, Brass and Aluminum CASTINGS On Short Notice.

"PHONO-ELECTRIC" WIRE. "IT'S TOUGH."

TROLLEY, TELEPHONE and TELEGRAPH LINES.
Mills Bridgeport, Conn.
BRIDGEPORT BRASS CO.,
10 Murray St., New York.

Brass, Bronze and Aluminum CASTINGS
FOUNDERS—FINISHERS.
W. G. ROWELL CO., Bridgeport, Conn.

HENDRICKS BROTHERS
PROPRIETORS OF THE
Belleville Copper Rolling Mills,
MANUFACTURERS OF
Braziers' Bolt and Sheathing
COPPER,
COPPER WIRE AND RIVETS.
Importers and Dealers in
Ingot Copper, Block Tin, Spelter, Lead, Antimony, etc.
49 CLIFF ST., NEW YORK.

Treatise on Friction and Lost Work in Machinery and Mill Work. With tables, figures and diagrams. By R. H. Thurston. Cloth. Illustrated. 451 pages. $4.00
For sale by David Williams Co. 232 William St. N. Y.

# THE IRON AGE

THURSDAY, NOVEMBER 17, 1904.

## The First Electric Locomotive for the New York Central.

A powerful high speed electric locomotive, designed and built for the New York Central & Hudson River Railroad by the General Electric Company and the American Locomotive Company, was officially exhibited and tried at Schenectady, N. Y., last Saturday in the presence of the Electric Traction Commission of the railroad company and its guests. This locomotive is the first of 30 to 50 which will be built for use near the New York terminal to haul through passenger trains up to 875 tons in weight at a maximum speed of 60 to 65 miles an hour. The New York Central & Hudson River Railroad Company is now electrically equipping the main line from the Grand Central Station to Croton, a distance of 34 miles, and the Harlem division as far as White Plains, 24 miles. It is the intention to handle all the traffic within these limits by electric locomotives.

The locomotives will be operated under the Sprague-General Electric multiple unit system of control, which allows two or more locomotives to be coupled together and operated from the leading cab as a single unit. Motive power may, therefore, be easily increased for extra heavy trains, with no complication in operation and with only the usual train crew. A single electric locomotive will be able to maintain schedule time with a 450-ton train, and two locomotives will be coupled together for heavier trains.

The locomotive consists of four driving axles on each of which is mounted without intermediate gearing the armature of an electric motor having a normal rating of 550 horse-power. The total rated capacity of the locomotive is 2200 horse-power, although for short periods a considerably greater power may be developed, making it more powerful than the largest steam locomotive in existence.

Hitherto gearless locomotives have been built with the armatures of the electric motors mounted on quills and spring suspended from the driving wheels. In the new locomotive the use of spring suspended quills is

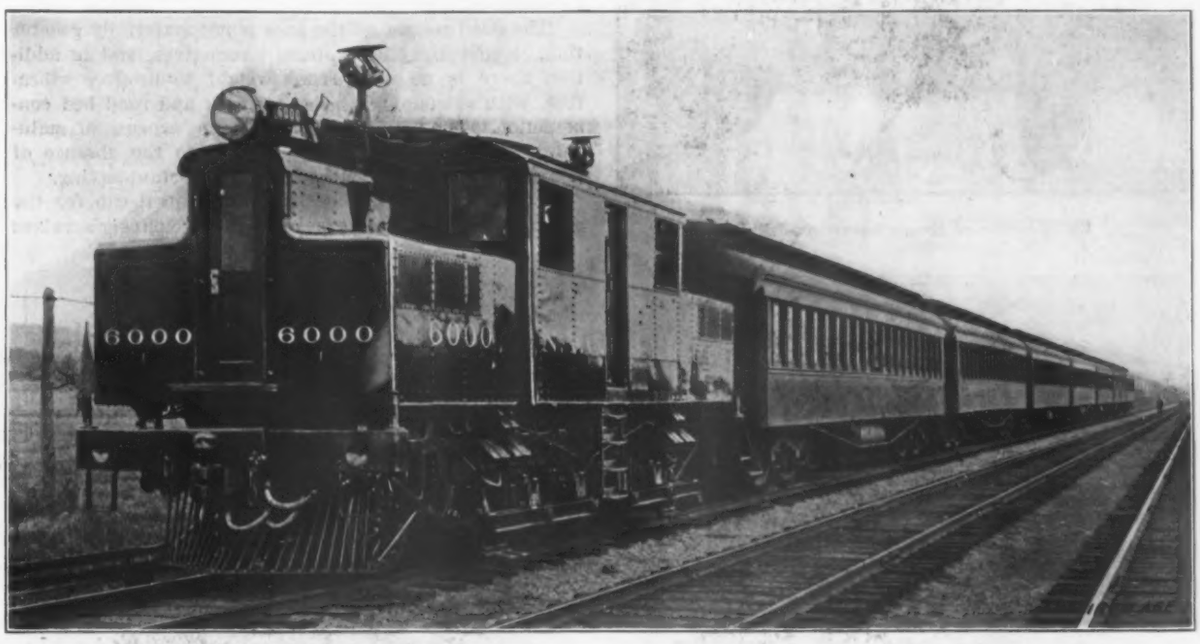



Fig. 1.—The Electric Locomotive as It Appears in Service.

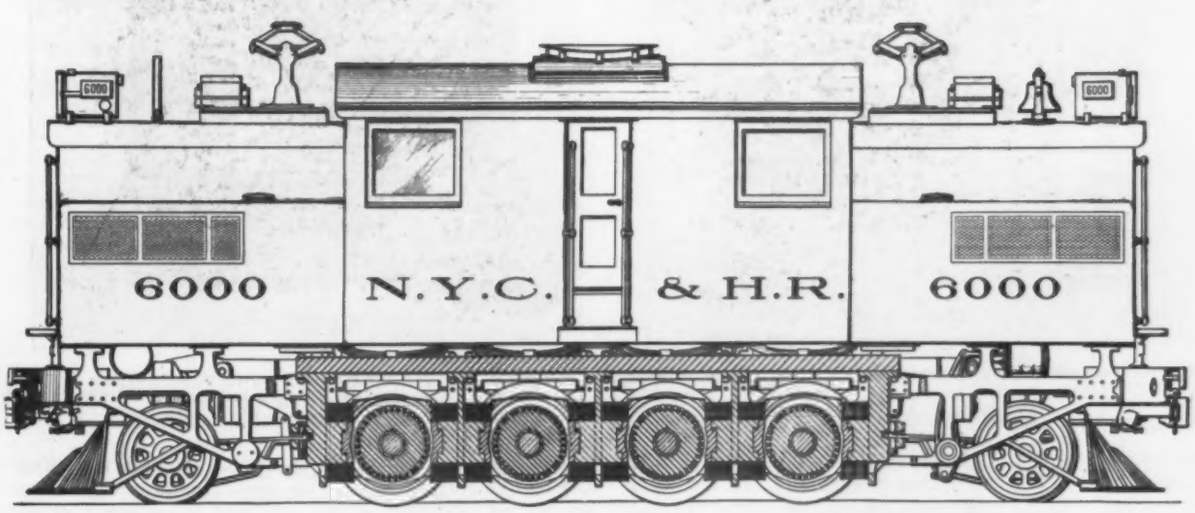



Fig. 2.—Side View and Longitudinal Section through the Trucks.

dispensed with, the armature being mounted rigidly upon the axle, thus reducing the bearings to those of the pony trucks and the main journals, all of which are outside of the driving wheels. The motor has two poles with nearly flat faces, so as to permit a large relative vertical movement between armature and poles as the latter move up and down with the riding of the frame upon the springs.

A longitudinal section of the locomotive frame is shown in Fig. 2. The main frame is of cast steel and

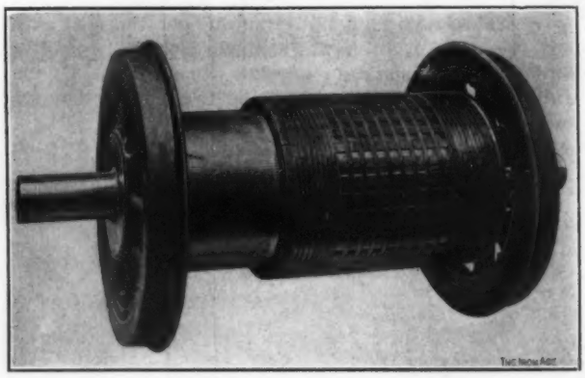


Fig. 3.—One of the Armature-Axle Units.

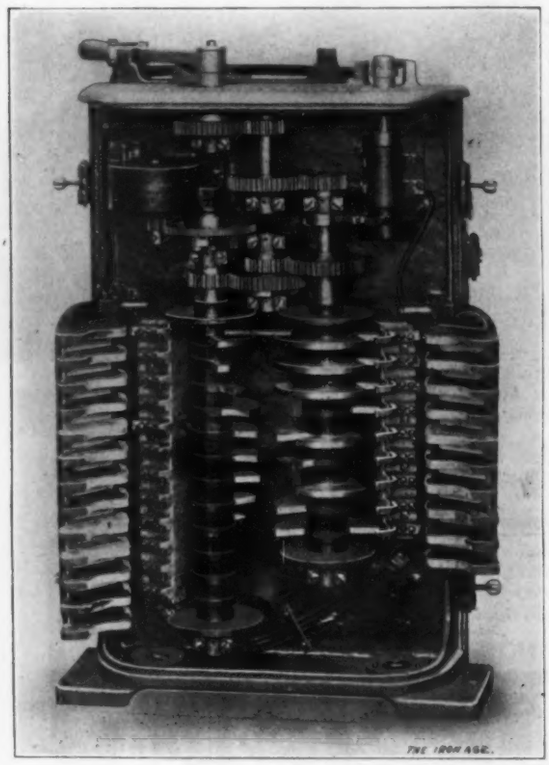


Fig. 4.—Controller with Cover Removed, Showing the Interior Mechanism.

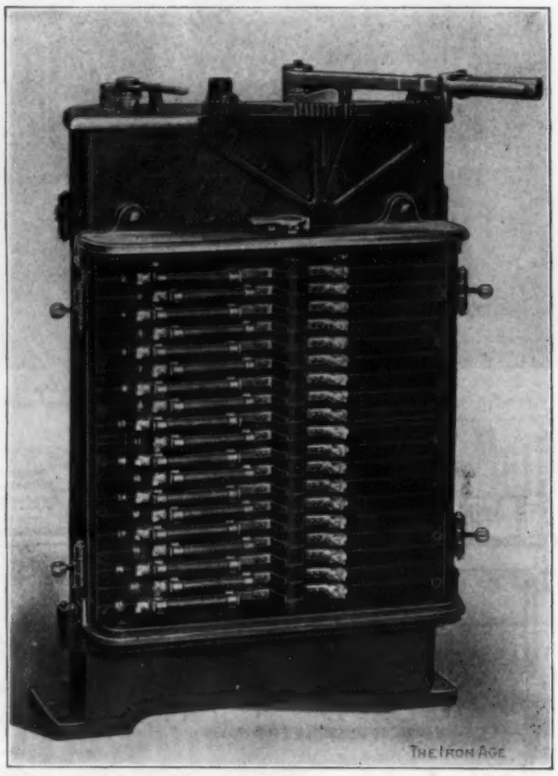


Fig. 5.—Back View of Controller with Fuses Exposed and Showing Cut Out Switches.

serves also as part of the magnetic circuit of the electric motors. It will be seen that the motors are arranged in tandem. The end pole pieces are cast as part of the end frames, and the double pole pieces between the armatures are carried by heavy steel transoms bolted to the side frame and forming part of the magnetic circuit, as well as cross braces for the truck. The field coils are wound upon metal spools, which are bolted upon the pole pieces. Proper distribution and division of the weight of the locomotive upon the axles has been accomplished by suspending the main frame and superstructure from a system of half elliptic springs and equalizing levers of forged steel, the whole being so arranged as to cross equalize the load and to furnish three points of support. This construction, besides being strong and simple in design, greatly facilitates repairs and renewals, as an armature with its wheels and axle may be removed by lowering the complete element, shown in Fig. 3, without disturbing the fields or any other part of the locomotive. All parts are readily accessible for inspection and cleaning.

The brush holders are mounted on insulated supports attached to the spring saddle over the axle journal, thus maintaining a fixed position in relation to the commutator. These brush holders are adjustable to allow for wear of the commutator and journal bearings.

The pony trucks are of the radial type and are pivoted by means of radius bars to the end frame of the main truck. The frame of the locomotive immediately above the trucks is supported by means of suitable links, so that the truck is free to swing about its center and is self centering on a straight track. This design is similar to the standard construction adopted by the New York Central & Hudson River Railroad Company for its steam locomotives.

The dead weight on the axle is not materially greater than is customary with steam locomotives, and in addition there is no unbalanced weight to produce vibration, with attendant injuries to track and road bed construction. The actual reduction in the expense of maintaining the rails and road bed, due to the absence of pounding and rolling, will effect an important saving.

The superstructure consists of a central cab for the operator containing master controllers, engineer's valves and switches and valves for operating, sanding, whistling and bell ringing devices. This apparatus is in duplicate, one set on each side of the cab, and is arranged so as to be manipulated from the operator's seat, while at the same time a practically unobstructed view to front and rear may be obtained from the windows. The air gauge, meters, &c., are located within view of the driver. There is a central corridor extending through the cab, giving access from the locomotive to the cars behind, and the contactors, rheostats and reversers are arranged along the sides of these corridors in boxes of sheet steel, which are sheathed on the inside with fire proof insulating material. All of these appliances are, therefore, easily accessible for repairs or inspection.

The control system permits three running connections —namely, four motors in series, two groups of two in

parallel series and all four motors in parallel. The motor reverser, contactors, rheostats and other controlling appliances are all of the Sprague-General Electric multiple unit type. The master controller, shown in Figs. 4 and 5, is fitted with a special operating lever about 24 inches long and capable of being moved through an angle of about 75 degrees. A current limiting device is provided in the master controller, consisting of a friction clutch operated by an electric magnet, which is

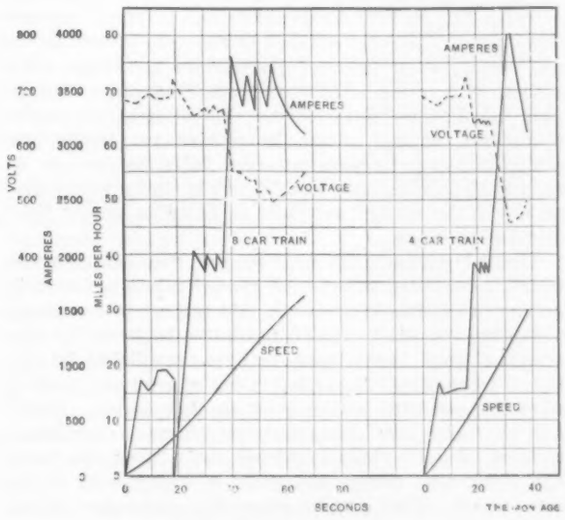



Fig. 6.—Starting Test.

energized by the current passing through one of the motors. When the current exceeds a predetermined amount the cylinder cannot be rotated further until the current has fallen sufficiently to allow the relay to drop. As long as the current does not exceed the desired limit the automatic feature is not in operation.

In the operator's cab there is placed a General Electric motor driven air compressor having a capacity of 75 cubic feet of free air per minute and consisting of

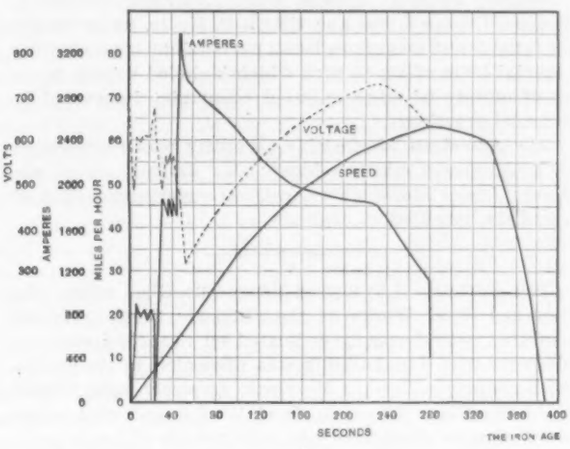



Fig. 7.—Preliminary Speed Run No. 1.—Eight-Car Train, 336 Tons; Locomotive, 95 Tons; Total, 431 Tons.

a twin vertical cylinder compressor driven by two 600-volt direct current series motors. The compressor is controlled by a governor which automatically cuts the motors in and out of circuit when the air pressure falls below 125 pounds or rises above 135 pounds. A reduction in air pressure sufficient to actuate any governor simultaneously starts up the air compressors in both locomotives when running double headed, and likewise when the air pressure has been raised and any one air compressor is closed down the other will be cut out of service.

Current is taken from the third rail by multiple contact spring actuated shoes, whose supports are carried on channel irons attached to the journal box. There are four of these shoes on each side of the locomotive. In terminal yards where there are many switches and crossings and at grade crossings an overhead construction is necessary. Additional contacts are therefore mounted on the top of the locomotive for taking current when the locomotive is passing over these points. This device may be raised and lowered by air pressure controlled from the engineer's cab. A magnetic ribbon fuse is placed in circuit with each shoe and overhead contact device as a protection in case of accidental short circuit.

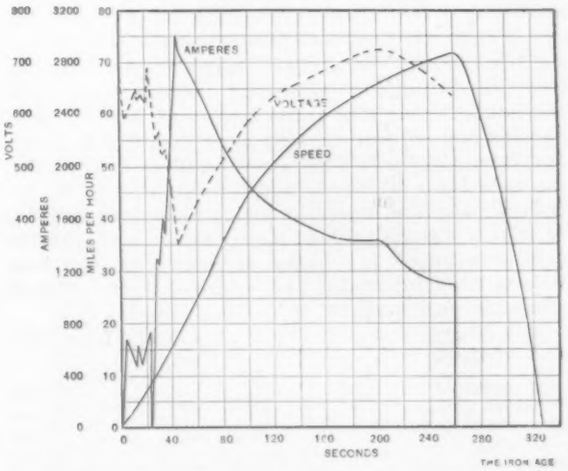



Fig. 8.—Preliminary Speed Run No. 2.—Four-Car Train, 170 Tons; Locomotive, 95 Tons; Total, 265 Tons.

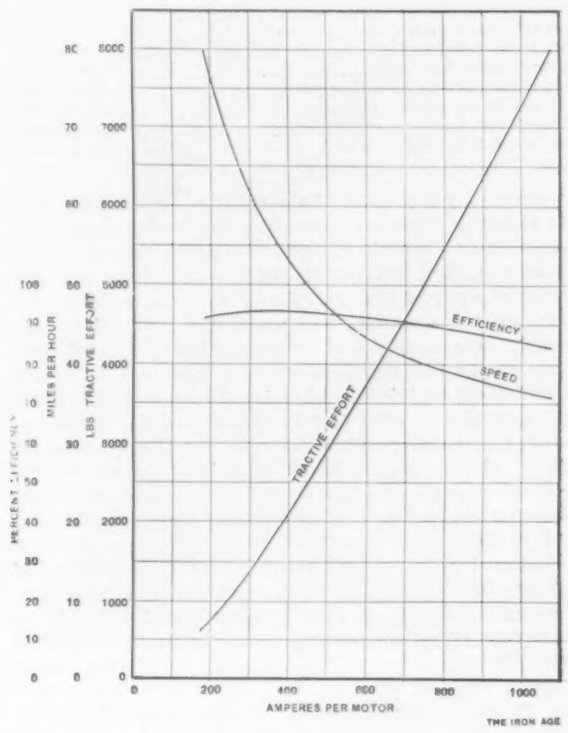



Fig. 9.—Characteristic Curves.—Diameter of Wheels, 44 Inches; Voltage, 600.

It is the intention to make complete preliminary tests and trials on these locomotives under all conditions likely to obtain in service operation. For this purpose the New York Central Company has set aside a 6-mile stretch of track on its main line between Schenectady and Hoffmans and equipped it with a standard third-rail construction. The track is practically straight and ballasted so as to permit attaining a maximum speed of 70 to 80 miles an hour.

Power for operating the locomotive is furnished by the General Electric Company, and for this purpose there has been installed in the new power house at the Schenectady plant a 2000-kw., three-phase, 25-cycle Curtis turbo-generator delivering 11,000 volts to the line. A special high tension transmission line has been constructed

from the power station for a distance of 5 miles to the substation at Wyatts. This substation contains a 1500-kw., 650-volt, 25-cycle rotary converter, with necessary static transformers for reducing the line potential from 11,000 to 460 volts, and a switchboard, consisting of a 600-volt direct current rotary converter panel, an alternating current starting panel and a high tension panel with an electrically operated type H oil switch. The rotary converter is self starting from the alternating current end, thus requiring no synchronizing devices or other complications when throwing the machine into service. The step down transformers are provided with taps giving one-third, two-thirds and full voltage for starting the rotary converter, these voltages being applied successively by means of double throw lever switches. The machine starts freely and easily without sparking and without drawing more than full load current from the line. This power station, transmission line, substation equipment and 6 miles of track is undoubtedly the most complete testing plant ever provided for trial of electric railroad motive power, and with the facilities afforded, in addition to testing the new locomotives, much interesting and valuable electric railroad information will unquestionably be obtained.

The general dimensions and data of the locomotive are as follows:

| | |
|---|---|
| Total weight of locomotive | 95 tons. |
| Weight on drivers | 69 tons. |
| Rigid wheel base | 13 feet. |
| Total wheel base | 27 feet. |
| Length over buffer platforms | 37 feet. |
| Extreme width | 10 feet. |
| Hight to top of cab | 14 feet 4 inches. |
| Diameter of drivers | 44 inches. |
| Diameter of pony truck wheels | 36 inches. |
| Diameter of driving axles | 8.5 inches. |
| Normal rated horse-power of locomotive | 2,200 |
| Maximum horse-power | 3,000 |
| Normal draw bar pull | 20,400 pounds. |
| Maximum starting draw bar pull | 32,000 pounds. |
| Voltage of current supply | 600 |
| Normal full load current | 3,050 amperes. |
| Maximum full load current | 4,300 amperes. |
| Type of motor | GE-84-A. |

Since only a portion of the track to be used for testing is yet available, no complete locomotive tests have been made. There has been installed in the cab a full set of recording instruments, and records have been obtained of some of the preliminary runs made to test the bearings and running qualities of the locomotive. Although these records will be superseded by careful tests made on the full length of track, bonded and with sufficient feeders supplied to minimize the drop, they indicate in a general way what may be expected of the locomotive running in regular service. Curve sheets are shown in Fig. 6, giving speed, current input and voltage at the locomotive, all on a time basis, with an eight-car train weighing 336 tons and a four-car train weighing 170 tons, both exclusive of locomotive. The total weight of train, including locomotive and passengers, was 431 tons and 265 tons for the eight-car and four-car trains respectively. Two sets of curves of running tests reaching as high a maximum speed as possible with the length of track available are given in Fig. 7. The maximum speeds reached were 63 miles per hour with an eight-car train and 72 with a four-car train. It will be noted that the trains were still accelerating at these speeds, but the length of track so far equipped did not permit attaining higher speeds.

The New York Central locomotives are not designed for abnormally high speeds at intervals but rather to obtain a high average schedule, due to their ability to accelerate more rapidly than is possible with the present steam locomotives. In the starting tests a speed of 30 miles per hour was reached in 60 seconds with an eight-car train weighing, including the locomotive, 431 tons, corresponding to an acceleration of ½ mile per hour per second. During certain periods of the acceleration the increase in speed amounted to 0.6 mile per hour per second, calling for a tractive effort of approximately 27,000 pounds developed at the rim of the locomotive drivers. This value was somewhat exceeded with the four-car train, where a momentary input of 4200 amperes developed a tractive effort of 31,000 pounds at the drivers with a coefficient of traction of 22.5 per cent. of weight on drivers. The average rate of acceleration with the four-car train, weighing, including the locomotive, 265 tons, was 30 miles in 37½ seconds, or 0.8 mile per hour per second, calling for an average tractive effort of 22,000 pounds.

The maximum input recorded, 4200 amperes at 460 volts, or 1935 kw., gives an output of the motors of 2200 horse-power available at the wheel. With 4200 amperes and a maintained potential of 600 volts there would have been an input to the locomotive of 2520 kw., corresponding to 2870 horse-power output of the motors. This output is secured without in any way exceeding the safe commutation limit of the motors and with a coefficient of traction of only 22.5 per cent. of the weight upon the drivers, thus placing this electric locomotive in advance of any steam locomotive yet built. No service capacity temperature runs have been made as yet, and the preliminary tests have not shown any warming up of the motors sufficient to occasion taking thermometer readings.

Throughout both the starting and running tests the electric locomotive showed its remarkable steadiness in running, a distinct contrast in this respect to the steam locomotive, especially should the latter be forced to perform the work here shown to be accomplished by the electric locomotive. The elimination of gear and bearing losses increases the efficiency of the locomotive. Reference to the motor characteristics shows a maximum efficiency of approximately 93 per cent., this value being fully 4 per cent. better than possible with motors of the geared type. This gain is especially noticeable at the high speeds, the efficiency curve remaining above 90 per cent. even at the free running speed of the locomotive alone, in contrast to the 85 per cent. or less which would be a good showing for a locomotive provided with geared motors. The simple construction and high efficiency made possible with this design of gearless motor, together with the minimum cost of repairs attending such a construction, make the direct current gearless motor type of locomotive a distinct forward step in electric locomotive construction.

The Electric Traction Commission of the New York Central road, consisting of Fifth Vice-President William J. Wilgus, John F. Deems, Bion J. Arnold, Frank J. Sprague, George Gibbs and Edwin B. Katte, under which the formal test was made, had a party of guests occupying a special train of seven cars, which included a large number of officers of other railroad companies interested in electrical traction.

The American Locomotive Company was represented by T. A. Sague, vice-president; W. Dalton, chief engineer; James McNaughton, general superintendent, and F. J. Cole, mechanical engineer.

---

The Carnegie Library at Duquesne, Pa., where the Duquesne Steel Works of the Carnegie Steel Company is located, was formally dedicated on Saturday evening, November 12. The building was presented to the people of Duquesne by Thomas Morrison, formerly superintendent of the Edgar Thomson Steel Works, and who represented Andrew Carnegie, who was unable to be present. Among those present at the dedication were Charles M. Schwab, former president of the United States Steel Corporation; A. C. Dinkey, president, and W. W. Blackburn, secretary of the Carnegie Steel Company. The Duquesne Library has been opened for about five months, but was not formally dedicated. The building is said to have cost about $300,000, contributed by Andrew Carnegie.

---

Edward C. Smith, 506 Commonwealth Trust Building, St. Louis, Mo., advises us that he is exclusive agent for the Sloss-Sheffield Steel & Iron Company in St. Louis territory, which embraces the district lying from the Indiana western boundary to the Pacific Coast. An item published in our issue for November 3 relative to the agencies of Robert Field, Cincinnati, is regarded as open to the inference that he is agent for the sale of Sloss-Sheffield iron in St. Louis territory.

## The Battle Ship New Jersey Launched.

The United States battle ship New Jersey, built by the Fore River Shipbuilding Company, was successfully launched November 10, at Quincy, Mass., in the presence of the Governors of New Jersey and Massachusetts, ex-Secretary of the Navy John D. Long and many distinguished guests. She is a sister ship of the Virginia, Nebraska and Georgia and was authorized in February, 1902. The new battle ship is a twin screw vessel and is built for a speed of 19 knots, the indicated horse-power of her triple expansion engines being 19,000. The general dimensions and chief characteristics of the vessel are as follows:

Length on load water line.....435 feet.
Breadth, extreme, at load water line.....76 feet 2½ inches.
Trial displacement, about.....14,948 tons.
Mean draft at trial displacement, about.....23 feet 9 inches.
Greatest draft, full load, about.....26 feet.

The New Jersey will carry four 12-inch guns, mounted by pairs in balanced turrets, one forward of the superstructure and the other aft, and each having a total arc of train of 270 degrees. Of the eight 8-inch guns which will be carried, four will be mounted by pairs in turrets, superposed upon the 12-inch turrets, and four in two broadside turrets, slightly forward of amidships. There will be a broadside battery on the gun deck of 12 6-inch rapid fire guns, six on each side. The secondary battery will consist of 12 3-inch rapid fire guns, 12 3-pounder semiautomatic guns, eight 1-pounder heavy automatic guns, two machine guns and six Colt automatic guns. She will also be fitted with submerged torpedo tubes.

The New Jersey is provided with a complete water line belt of armor, 8 feet in width amidships, 11 inches thick at the top and 8 inches at the bottom, tapering to a uniform thickness of 4 inches at the ends of the vessel. She also has a casemate armored belt extending over about 245 feet of her length, of a uniform thickness of 6 inches, rising from the top of the main belt to the upper or main deck, joined at its after end to the barbette of the 12-inch turret by a 6-inch armored bulkhead and having at its forward end an armored bulkhead of 6-inch thickness extending from side to side, thus forming a citadel or redoubt within which the 6-inch guns will be mounted. Within this citadel or redoubt and extending from the forward turret to the after turret light armor, 1½ and 2½ inches in thickness, will form subdivisions of the gun inclosures, thoroughly protecting the gun crews from flying splinters and fragments of bursting shells.

The applications of electricity on board this vessel and the others of her class are very much wider than in the case of any other battle ships in existence, with the possible exception of the Kearsarge and Kentucky. All of the turrets have electrical turning gear, and the ammunition hoists, blowers to the turrets and general ventilation, the general workshop, and practically all of the auxiliaries, outside of the engineers' department and excepting capstan and stearing gear, are to be electrically driven. To provide for the power required for these purposes eight engines and dynamos will be installed, mounted on combination bed plates, two having a rated output of 1250 amperes at 125 volts, and six with 62.5 amperes at 125 volts.

**The Carnegie Steel Railroad Tie.**—In *The Iron Age* of November 3 mention was made of the fact that the Carnegie Steel Company, Pittsburgh, had secured a contract from the New York Central Railroad for 7000 steel railroad ties, and from the Lake Shore for 5000. More railroads are thus adopting steel ties, it having been conclusively proved that while the initial cost is higher than for the wooden ties, the long life of the steel tie and its compactness more than offset the cost of the wooden tie. The Bessemer Railroad, which is controlled by the Carnegie Steel Company, has been using steel ties for four or five years with most satisfactory results. The Pennsylvania Railroad has steel ties on several sections and curves, and the Lake Shore is making some severe tests in and near Chicago, while the Baltimore & Ohio and Pittsburgh & Lake Erie roads are also working along the same lines. Indications are that within the near future steel ties will be very generally adopted by the leading railroads, which will mean a greatly increased consumption of steel.

## Three New Multiple Spindle Sensitive Drills.

The demand for sensitive drill presses that are capable of using drills made of the new high speed tool steel has lately been given serious consideration by the builders of this class of tool. The machines shown in the accompanying illustrations were all designed with the end in view of meeting this particular requirement.

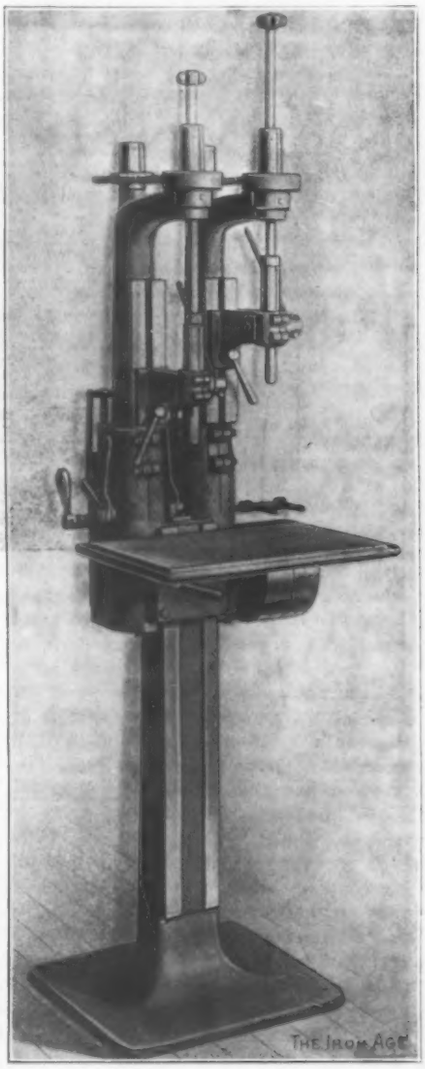



Fig. 1.—The Fenn-Sadler Two-Spindle Drill.

In Fig. 1 is shown a two-spindle drill made by the Fenn-Sadler Machine Company, Hartford, Conn., especially intended for manufacturing purposes, though it may also be used to advantage in the toolroom. It is guaranteed to drill ½-inch holes at full lever pressure, and will do effective work with drills of larger diameter. It is rigidly constructed to receive much greater power than the ordinary sensitive drill press will stand as designed under conditions existing before the manufacturers of twist drills mastered the art of hardening the new steel after it had been fashioned into their product. With a main driving shaft speed of 200 revolutions per minute, spindle speeds of 200, 400 and 800 revolutions are obtained by means of a quick change speed device. The power from the horizontal driving shaft is transmitted to the vertical driving shaft through a sliding cone of

three gears on an intermediate shaft which is actuated through bevel gears from the horizontal shaft. The cone slides to mesh any one of its three gears with a corresponding gear on the vertical shaft, each producing a different speed; or it may rest in one of two neutral positions, the vertical shaft and the spindle remaining idle. The cone is operated by a lever, seen in the illustration, at the side of the column on the gear case, just above the level of the table. Any position of the cone is maintained firmly by means of a slotted bar. Each spindle is operated independently of the other. A feature of the machine is the arrangement by which the top columns may be swung in different positions, a great convenience at times, especially in jig work, as it is possible to drill any two holes at the same time using the jig. The drill press, as shown, transmits its power from the vertical shaft to the spindle by chain and sprockets, but it is the company's intention to replace this arrangement by a train of gears. Each spindle is counterbalanced by a spring which makes it sensitive enough to drill small holes. The travel of the spindle is 10 inches.

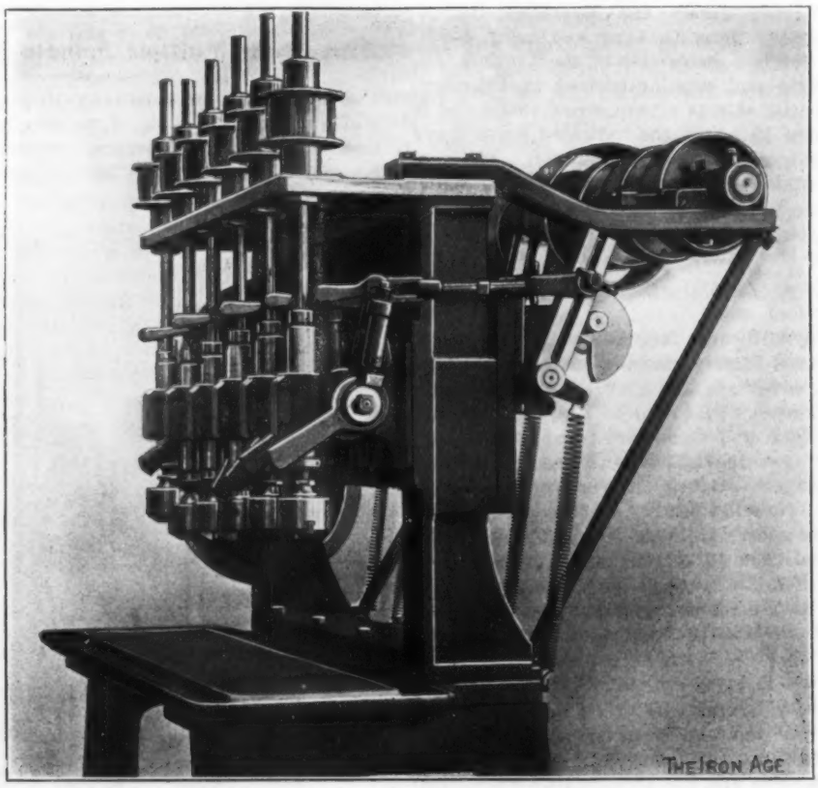



Fig. 2.—The Dwight Slate Six-Spindle Sensitive Drill.

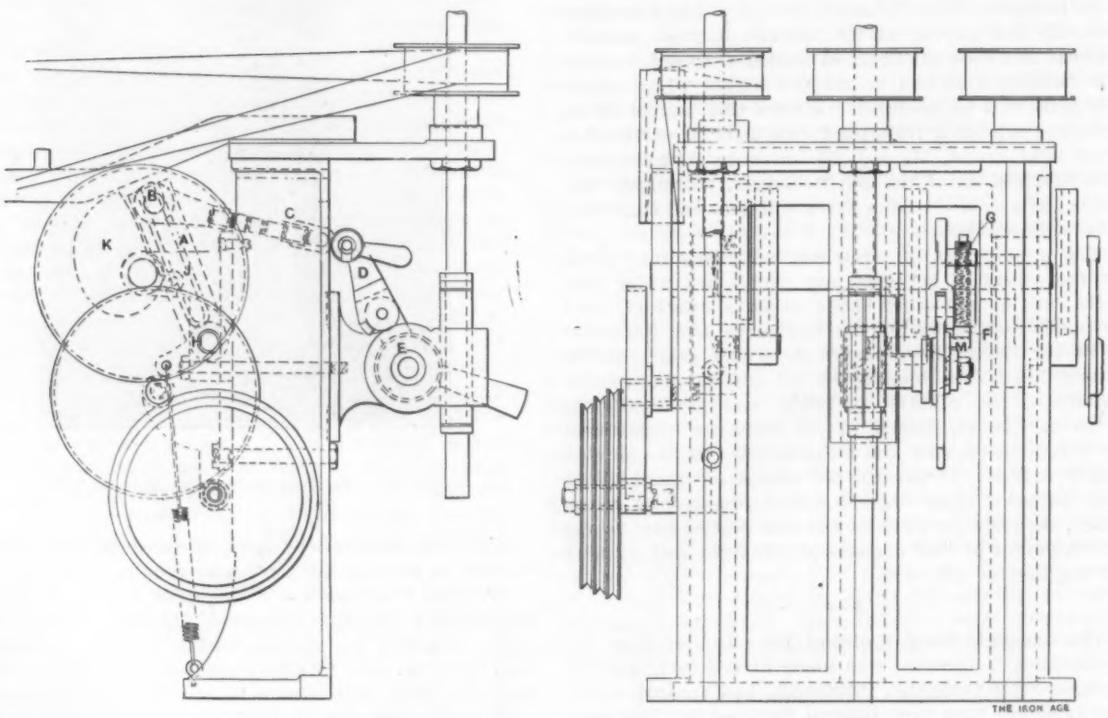



Fig. 3.—Detail of the Dwight Slate Sensitive Drill.

The sensitive drill press shown in Figs. 2 and 3 is

manufactured by the Dwight Slate Machine Company, Hartford, Conn. It contains an improved automatic cam feed, together with a safety stop adjustment designed to operate when extra strain is thrown upon the feeding mechanism by hard spots in a casting, by the dulling of the tool or its slipping in the chuck, or through carelessness on the part of the operator. Such a strain is likely to cause serious damage to the machine.

The cam lever feed may be seen in Fig. 2, but will be better understood by reference to Fig. 3. The swing arm A is pivoted on bearing H, which is attached to the post, and on the swing arm is a roller, J, against which works the cam K. The roller is mounted on a fixed stud. The cam is of a form such that the first third or half of the depth to be cut is drilled quickly and the feed is then

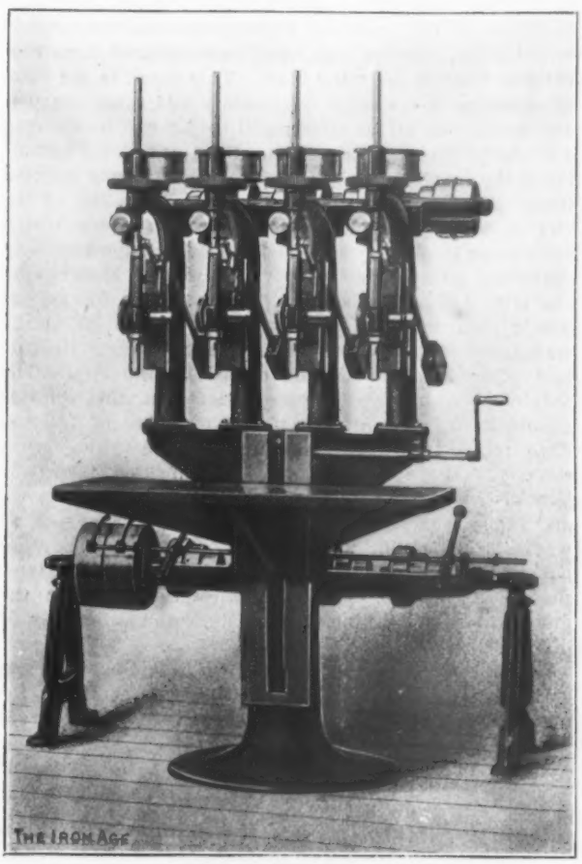



Fig. 4.—The Barr Four-Spindle Drill.

reduced as the hole is nearly finished, so that the point is traveling slowly as it pricks through the completed hole. The arm may be locked in any position in the T-slotted front, thus regulating the throw; the nearer the bottom of the arm the shorter the throw and consequently the shorter the travel of the drill spindle. Fine adjustments of the throw are obtained by means of the turnbuckle on the connecting rod C. There is no necessity of changing the cams. The cams of the various spindles may be set in any relation one to another.

The safety stop is in the lever arm D E, which is made in two parts, hinged together, the lower member being locked to the pinion shaft and the upper member actuated by the connecting rod. The members are held together by an adjustment spring pin or latch, F, which locks into a recess on the cam shaped piece M attached to the lower member. The spring G has an adjusting screw by which the desired tension may be obtained. If overload occurs the upper member of the arm breaks connection and the cam may continue to revolve without actuating the drill spindle. The machine is designed primarily for light drilling.

The drill press shown in Fig. 4 is designed to do very heavy work with high speed tool steel drills and is manufactured by H. G. Barr, Worcester, Mass. It is guaranteed to drill simultaneously as many ¾-inch holes as there are spindles, the machine being built with from two to six spindles. Both power and lever feed are provided. While not intended for continuous work with larger than ¾-inch drills, it will drill ⅞-inch holes if required, and is perfectly suited for light work.

Each spindle is independently driven from a cone pulley on the countershaft, affording three speeds. A 3½-inch belt is used on the tight and loose pulleys, a 1¾-inch belt on the cones and a 1½-inch belt on the spindle driving pulley. The ratio between the gear on the pulley stud, which is set back of the spindle, and that on the pulley is 1 to 2, this latter reduction being used to give increased power to the drill. The machine must be run at its slowest spindle speed for ¾-inch drilling. The belt power between the cone and the spindle is sufficient to allow any desired countershaft speed, the only requirement being that the ratio of speed between spindle and countershaft be maintained by always running at the slowest spindle speed.

The feed rod, driven by worm and gear from the spindle, swings on a steel link, one end of which is attached to the feed rod bracket and the other end to the adjustable head. The feed rod may be swung back out of mesh with the feed, in which position it is held by a flat spring under the stop lever. When in mesh the stop lever is held against a hardened steel latch by a spiral spring at its inner end. The release is operated either by hand or automatically by means of an adjustable block dovetailed to the spindle rack. The 1-inch spindles are provided with ball bearing thrust collars and have 5-inch traverse. They are counterbalanced for sensitive drill work. The heads are adjustable and the tables are adjustable on the column by means of a crank through bevel gears and a screw working in a brass nut within the column. The spindles are bored with a No. 2 Morse taper. The same machine is provided without the reducing gears between the spindle pulley and the spindle, this type being intended for drilling holes up to ⅝ inch with ordinary tool steel.

## Secrecy in Customs Reappraisements.

A determined attempt is to be made to secure a ruling on the question of secrecy in reappraisement, which has been raised by George Borgfeldt & Co., but which is being watched with intense interest by all importers. The facts in the case are as follows:

About two years ago Borgfeldt & Co. began to import large quantities of cheap hotel china ware from the Maestricht district of Holland. The domestic manufacturers, who had until then controlled the market on goods of this class in this country, charged undervaluation, and as a result an investigation was made which led to the invoice values of Borgfeldt & Co.'s goods being advanced from 10 to 20 per cent. by the local appraiser. An appeal was taken to General Appraiser Sharretts, and at his request two independent investigations were made in Europe by special Treasury agents, which resulted in Mr. Sharretts sustaining Borgfeldt & Co.'s invoice values. The domestic manufacturers continued their agitation, however, with the result that the collector was ordered to appeal from the decision of Mr. Sharretts to a board of three general appraisers. The case was reheard by them, and on fresh testimony presented by the domestic interests the advance was sustained. This new testimony is what W. Wickham Smith, counsel for Borgfeldt & Co. is trying to obtain permission to inspect.

It has always been the policy of the Treasury Department to keep secret the evidence presented to the general appraisers on reappraisement matters. The Department claims that only by doing so is it able to obtain the testimony of importers against others in their own trade, and it has taken the position that to depart from this policy would be to cut itself off from the only source of information available as to market values. The importers claim, however, that they are entitled to know what the evidence adduced against them is and to be confronted with the witnesses against them.

In the case in point it is alleged that the evidence on which the board of three general appraisers finally sustained the advance on Borgfeldt & Co.'s goods was furnished by an American who went to Holland and, it is stated, he represented himself to the manufacturers from whom Borgfeldt & Co. bought their goods as a merchant from Manila. It is further said that he bought small

quantities of the goods, in fact only a dozen or so of each article, and was given prices very much higher than those obtained by Borgfeldt & Co. for 100-case lots. He was enabled to testify, however, that he had to pay more for the goods than the price at which they were invoiced to Borgfeldt & Co., and on this testimony it is claimed the values of the large importers were advanced. Such is the law, however, that even if Borgfeldt & Co. succeed in refuting the evidence they will not be able to recover the excess duties paid. They desire to see the evidence in order to be able to refute it on future importations.

## Professor Howe on the Gayley Dry Blast.

Prof. Henry M. Howe of Columbia University has made the following comments on the paper read by James Gayley before the Iron and Steel Institute, entitled "The Application of Dry Air Blast to the Manufacture of Iron:"

The value of Mr. Gayley's invention is so great that one can hardly rate it justly without danger of seeming theatrical. When we consider the greatness of the pig iron industry, even the minor advantages of his process, such as the saving of fine ore, the raising of the phosphorous limit of the ore and the better control over the sulphur and silicon contents of the pig iron, collectively are of enormous value; but, passing these by, the fuel economy reported fairly takes one's breath. Assuming that the world's annual output of pig iron is roughly 46,000,000 tons, and that it calls for some 46,000,000 tons of coke, representing some 66,000,000 tons of coal, Mr. Gayley's saving of 20 per cent., as shown by his Exhibit VII, would correspond, if applied to all the furnaces of the world, to no less than 13,000,000 tons of coal per annum, or more than twice the total annual coal production of New South Wales, and more than half that of such important coal producers as Belgium and Russia. We hardly expect this invention to be used at every furnace at home and abroad; yet when we remember to how great a proportion of all the furnaces of the world Neilson's invention of the hot blast has been applied, we need not fear that any large fraction of the world's furnaces will fail to adopt the dry blast sooner or later.

His remark in his last paragraph but one, that the dry blast plant "started without a hitch and no difficulties have been developed in any direction," will not greatly surprise those familiar with his exploits.

Refrigerating processes evidently have a great future. We need not here consider such obvious uses as cooling dwellings and factories in hot climates, though our failure to do this will, to the future historian, stamp this age as among the barbarous ones. But there is a use which is of interest to those of us who speculate as to the future of the iron industry. Not a few at this meeting have said with Burns:

> "And forward, though I canna see,
> I guess an' fear."

At first sight it certainly may seem that the supply of iron ore, finite as it is and not reproduced like our animal and vegetable supplies, will exhaust itself; not, indeed, in our time nor that of our children, but long before the other great staple materials of industry, such as wood, the textile substances, animal and vegetable, breadstuffs, meat, and other foods. Yet on reflection this idea loses its force; for if the earth really is an enormous iron meteor with but a relatively thin crust of rock there is a supply of iron which should last long after the earth has ceased to be habitable. We depend upon the forests and green fields for our supply of oxygen (and of food); but when sun and earth shall have so far cooled that the ice caps, spreading out from either pole, finally meet at the Equator, when mother earth, exhausted, draws together those icy curtains for her endless sleep, where will be the fields and forests to give us the breath of life? Will not our atmosphere then be one of nitrogen plus carbonic acid, and the earth a desert?

But how are we to attack and reach this iron nucleus of the earth? Clearly through these refrigerating processes. When man shall have exhausted the limited, and hence exhaustible, deposits of the earth's crust, knowing the vast central mass of iron beneath him he will be forced to find a means of freezing his way to it.

## Chicago's New Charter and Municipal Ownership.

The city of Chicago is reaching a crisis in its municipal affairs, and what is happening in Chicago is typical of the possible future of any great American city. At the last election the proposition was carried to amend the State Constitution so as to permit the granting of a special charter to Chicago. This charter, when granted, will give the city larger liberties than it now enjoys in the management of its own affairs, transferring from the State capital at Springfield to the Council Chamber at Chicago most of the future legislation for the city.

Right at this juncture a persistent and very determined force, bent on municipal ownership of the street railway lines, is asserting itself. This force, in the form of municipal ownership, referendum and other leagues, announces that all its efforts will be devoted to securing a clause in the new charter compelling, or at least authorizing, the acquirement by the city of the existing traction lines. The new charter will permit the bonding of the city in the sum of $100,000,000, about half of which will have to go to paying the debts of a dozen supplementary governing and taxing bodies which will be absorbed by the city, and the balance will be available for needed public improvements in the shape of extensions to the water, sewerage, school, street, park, electric lighting and other interests already owned by the city. The municipal ownership leagues insist that this surplus should at once be applied to the purchase of traction lines whose franchises make the purchase optional with the city, and they argue that the earnings of these traction lines will more than provide for the other interests, and that the public will be rendered car service such as would be impossible with private ownership. They announce that they will work for the defeat of any charter that does not vouchsafe adequate provisions for the municipal ownership of traction lines and ultimately of other public utilities.

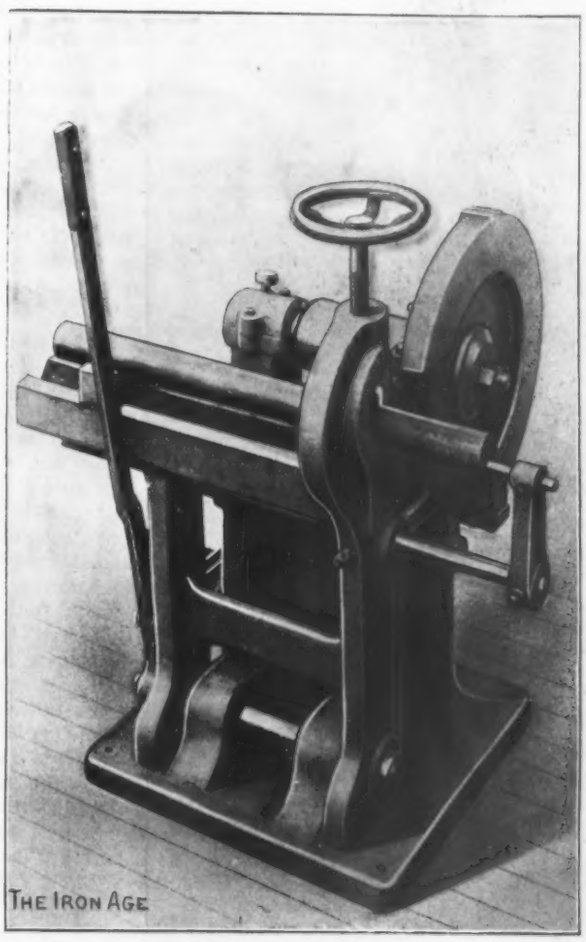
Upon the outcome of this matter depends the placing or delay of millions of dollars' worth of contracts for machinery, engines, boilers, pumps, street paving, sewers and other public improvements.

## The Steel Casting Trade Unsatisfactory.

The Steel Founders' Society, composed of a number of the largest steel casting plants in the country, which has its existence for the purpose of comparing notes and assisting in promoting the general interests of the steel foundry business, is just completing its report for the fiscal year ending June 30, 1904. An examination of this report shows an unfortunate result for the year's business. Comparing the last year with the preceding one in the output for the six months ending January 1, 1904, there is a decline in volume of from 38 to 47 per cent. in the various plants, while for the last six months, or up to July 1, 1904, as compared to a similar period to July 1, 1903, there is a falling off in sales of from 45 to 63 per cent. There has been practically no reduction in the average rate of wages, and while there has been a decline in the cost of pig iron it is not in proportion to the decline in the prices of the finished material. It is the awkward condition of a decline in selling prices, a decline in output and proportionate increased fixed charges on one side, with only a small decline in the cost of production on the other, that accounts for the fact that during the year three or four steel casting plants were compelled to temporarily suspend operations, and four plants were obliged to discontinue manufacturing steel castings. The main office of the Steel Founders' Society of America is in the Penn Building, Pittsburgh, William Dando being resident secretary. The other officials are: O. P. Letchworth of Buffalo, N. Y., president; W. W. Balkwill of Cleveland, Ohio, vice-president, and C. C. Smith of the Union Steel Casting Company, Pittsburgh, is treasurer. Monthly meetings of the Steel Founders' Society are held, and the next regular monthly meeting will take place in Cincinnati, on Thursday, November 17.

## The Billings & Spencer Hot Saw.

The hot saw shown in the accompanying illustration is intended particularly for cutting blanks for drop forgings from bar stock. The advantages of nicely squared stock for this purpose are obvious. The work is clamped to a swinging table by means of a hand wheel shown at the top of the machine. The table is pivoted at the base and the leverage of the long operating handle is such that the work may be advanced against the saw with no great exertion on the part of the operator. The stop gauge for limiting the length cut off from the bar is held on a rod which slides loosely through its bearings in the work carriage when released by its clamp screw. The gauge bar is also adjustable so that the setting may be accomplished in very short order. The supporting bar may be reversed and the gauge fixed at the other end when it is desired to cut longer pieces to exact length




The Billings & Spencer Hot Saw.

than the gauge can be set for when in the position shown in the illustration. The machine is manufactured by the Billings & Spencer Company, Hartford, Conn.

**A. M. Byers & Co., Incorporated.**—This firm has leased for a term of years the plant of the Carnegie Tube Company, Carnegie, Pa., which has been idle for several years. This plant was built in 1901-1902, the first tubes being made in January, 1902, and the first skelp early in May, 1902. It contains three heating furnaces and one 12-inch train of grooved rolls, and the annual capacity is 30,000 tons. The finishing department is equipped for the manufacture of wrought iron pipe in sizes from ¼ inch to 3 inches in diameter, the annual capacity being 20,000 tons.

The J. E. Wright Company, Wheeling, W. Va., has booked some nice contracts. Among these may be mentioned a large tipple and crusher building with a steel trestle, for the Connellsville coking region; a stand pipe for the supply of city water to the hilltop residents of Stubenville, Ohio, and several crane runways. In the brick and cement department, orders have been filed from four street railway corporations for street pavers. The company also states that bar iron and coupling iron orders are coming in rapidly.

## The New Additions to the Navy.

Plans and specifications for the new colliers to be built in Government yards are being rapidly pushed. The "Erie," which is to be constructed at the New York yard, will probably have her keel laid some time in February. The "Ontario," which is to be constructed at the Mare Island (Cal.) yard, cannot be begun until Congress makes the necessary appropriation for fitting up the yard, but there will probably be very little delay on this score, as the plans and specifications for the "Erie" will also serve for the "Ontario," and the appropriation of $120,000 to be made by Congress will be made immediately available and will be at the disposal of the Secretary of the Navy by the middle of February. The Department will keep an accurate comparative account of the cost of building these two colliers for the purpose of determining the relative expense of ship construction on the Atlantic and Pacific.

The plans of the three scout ships are being pushed as rapidly as possible, but the designers are still awaiting plans and specifications for the turbine engines. The third scout ship will have as motive power the regular naval reciprocating engines and water tube boilers, but as it is desired to build the three vessels as nearly as possible on the same general design, details cannot be worked out until both turbine installations have been finally approved.

The Department will open bids for the battle ship "New Hampshire" and the two cruisers "North Carolina" and "Montana" on December 15. The characteristics of the battle ship have already been given in these dispatches. The general dimensions and features of the cruisers are as follows:

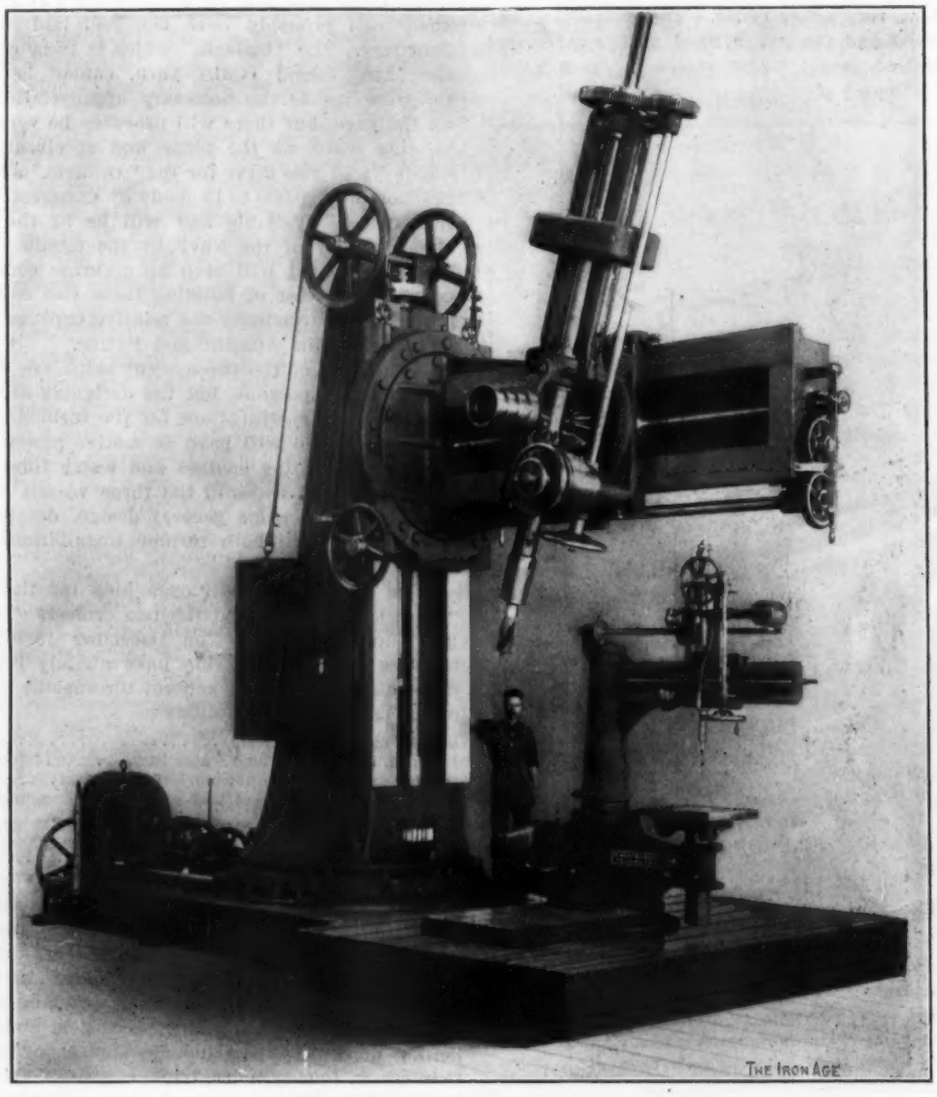
| | |
|---|---|
| Length on load water line | 502 feet. |
| Breadth, extreme, at load water line | 72 feet 10⅓ inches. |
| Displacement on trial, not more than | 14,500 tons. |
| Mean draft to bottom of keel at trial displacement, not to exceed | 25 feet. |
| Total coal bunker capacity, about | 2,000 tons. |
| Coal carried on trial | 900 tons. |
| Feed water carried on trial | 66 tons. |

The armament of the cruisers will consist of a main battery of 4 10-inch and 16 6-inch breech loading rifles, 23 3-inch rapid fire guns and 4 submerged torpedo tubes, and a secondary battery of 12 3-pounder and 4 1-pounder semiautomatic guns, 2 0.30 caliber machine guns, 2 0.30 caliber automatic guns and 2 3-inch field guns. The propelling machinery will include engines of the vertical, twin screw, four-cylinder, triple expansion type of a combined indicated horse-power of not less than 23,000, and 16 water tube boilers of a type to be approved by the Bureau of Steam Engineering. The vessels are to be fitted with general workshops, in which are to be installed the following tools, run by electric motors:

One screw cutting back geared extension gap lathe, to swing 28 inches over the upper ways and 48 inches over the lower ways, and to take between centers 10 feet when extended; one 14-inch screw cutting back geared lathe, to take not less than 4 feet between centers; one column shaping machine of about 15-inch stroke and not less than 15-inch traverse; one upright drill press, to drill up to 1½ inches in steel, 14 inches from edge of work, with at least 14-inch traverse of spindle; one 16-inch sensitive drill; one universal milling machine, with at least 18-inch table feed, 4½-inch traverse and 13-inch vertical feed; one universal milling machine, with at least 18-inch table feed, 4½-inch traverse and 13-inch vertical feed; one combined hand punch and shears, with 6-inch shear blades, to cut ⅝-inch round iron, shear ⅝-inch steel plate, and punch ⅝-inch holes in ⅝-inch mild steel plates 4 inches from edge; one double emery grinder on column, with two carborundum wheels 12 inches in diameter and 2-inch face; one 4 x 30 inch grindstone, with iron trough, on legs; six bench vises, one blacksmith's forge; and all necessary and usual spare parts, tools, &c., will be furnished for the above machine tools. W. L. C

## The Bement-Miles Ten-Foot Radial Drill.

A machine notable for its size, as will be appreciated from the illustration herewith, is the 10-foot radial drill built at the Bement-Miles works of the Niles-Bement-Pond Company, in Philadelphia. This machine is designed for drilling armor plate, which requires the largest and most massive tools. It is a full universal machine of the heaviest construction, the spindle being 6 inches in diameter. The column is provided with power rotating mechanism, and the saddle also has power traverse on the arm. The dimensions of the machine are interesting. It will drill to the center of a 20-foot circle; the greatest distance from the face of the column to the spindle is 121 inches; the greatest distance from the base plate to the spindle is 108 inches, and the spindle has a traverse of 42 inches. The spindle has a wide range of speeds through gearing which is increased by a small speed variation in the motor. The arm is counterbalanced, has power lift, and may be revolved about its axis by hand through spur and worm gearing. To give a better conception of the great size of the machine, it is shown with a 3½-foot radial drill mounted on its floor plate. This machine was built for the new armor plate department of the Midvale Steel Company, and two similar drills have also been built for the Carnegie Steel Company's armor plate department.




The Bement-Miles Ten-Foot Radial Drill.

**Allis-Chalmers Personnel.**—W. A. Nelson, who was appointed superintendent of equipment of the Allis-Chalmers Company, October 1, began his services with that company in August, immediately after his resignation became effective as assistant superintendent of the Westinghouse Electric & Mfg. Company. R. C. Wright, for several years in charge of the design of special tools and fixtures used in the manufacture of steam turbines at the East Pittsburgh works of the Westinghouse Machine Company, has resigned his position with that company to accept similar duties at the Milwaukee works of the Allis-Chalmers Company. Charles F. Barth has recently been appointed foreman of the steam turbine department at the West Allis works of the Allis-Chalmers Company. Mr. Barth resigned his position as foreman at the East Pittsburgh works of the Westinghouse Machine Company, a position he had occupied for a number of years. C. A. Derby has resigned his position as assistant manager of the Lyon Cypress Lumber Company to join the selling staff of the Allis-Chalmers Company, in its saw mill department.

Ships in motion in relatively shallow water have a greater draft than when at rest under the same conditions of loading. This interesting and important fact has been developed by a recent investigation in New York harbor. It has long been recognized that the stern of a vessel in rapid motion has a tendency to settle, but it now appears that the entire ship takes what is known as a "squat" under such conditions. The importance of the fact may be realized when it is stated that a ship supposed to be drawing 29 feet of water, passing over a bar where a depth of 30 feet exists, will almost invariably strike bottom, even though her speed be relatively slow. The magnitude of the "squat" has in some cases been found to exceed 4 feet.

## Lake Mining Matters.

DULUTH, MINN., November 12, 1904.—By the close of the coming week iron ore shipments from Lake Superior will be dropping off rapidly and a large proportion of the vessels now engaged in that trade will be placed in ordinary. To this time, though there is little decrease in activity, and the shipments for the half month, from Minnesota alone, will not be much under 1,200,000 tons. For October the two roads belonging to the United States Steel Corporation delivered at lake ports 1,740,000 tons, nearly as much as in the record months and far in excess of any preceding October. From all ranges around the lake comes the pleasing intelligence that stock piles are exhausted, or so nearly so that exceptions do not count. Old piles that have been on surface since the close of booms in bygone years have been cleaned up. On the Mesaba range, where the accumulation of stocks has not been as heavy as elsewhere, there was one large pile that had been on surface for eight years, that of the Cloquet mine at Eveleth. It is now gone. The same is true of old ranges and old mines. This is a fact that augurs well for the winter's activity, and it looks as though there was to be more mine operation during the new season than in some years. While 1905 is not expected to reach the figures of 1902, it is expected by all well informed ore men to exceed 1903 to some slight extent. Everybody now admits that 1904 is to see a total of 20,000,000 tons, which is 6,000,000 or 7,000,000 more than Cleveland estimates for the early season.

### Quicksands on the Mesaba.

In its development of the Monroe mine, Mesaba range, the Oliver Iron Mining Company has been able to maintain its original shafts, though only by the constant exercise of vigilance and skill while sinking. Both shafts are now far beyond any danger of going together, but for a long time it was a serious fight. The difficulty of sinking in the immediate vicinity of the Monroe, and the obstacles which have been successfully overcome by the Oliver Company, are evidenced by the fact that at Shenango mine, close by, three attempts were made to sink a shaft into the ore body before an opening was got down, and that even now, after three years of constant effort, the mine is scarcely opened on a scale that permits mining of any considerable tonnage. Two of the Monroe shafts are taking water at the rate of from 1190 to 1250 gallons of water a minute each, and this in openings that are practically limited to vertical workings alone. The quicksands found in sinking these shafts were the cause of the trouble experienced in that work, and for a long time the shafts were so filled with timber and so heavily braced that passageway through them was difficult. Now these timbers have been taken out and the shafts are as straight and firm as if there had never been any difficulty. Stripping at this property continues steadily and heavily, and will be pushed late into the winter. It is not probable that the mine can be a large producer the coming year, this depending, however, on the amount of stripping the contractors can move between now and then, but Monroe is going to be a record breaker when once in full operation, and will make a good many other large and prominent mines look to their laurels, both in point of production and in costs.

Jones & Laughlin have taken the old Rolling Mill mine, near Negaunee, and will open it at once on a considerable scale. This mine has for some years been known as the Chester, and was operated under lease by the Chester Mining Company of Duluth, of which Joseph Sellwood is president. But on account of difficulties arising through his former Cleveland ore connection the mine was dropped to the fee owners some time ago. It has about 1,000,000 tons in sight from an open pit and has an excellent prospect for further exploration. This mine produces a lean, silicious Bessemer, running about 40 per cent. iron, 0.040 phosphorus and about 38 per cent. silica, and is excellent for a Mesaba mixture; there is also a higher grade of non-Bessemer ore. The property can be mined cheaply. Explorations will be carried forward at once to determine the additional amount of ore to be mined and the method of mining that should be adopted. Cole & McDonald of Duluth have this work in charge and have located one drill already. The mine lies between the Mary Charlotte, Breitung, Hematite and Milwaukee. Nothing has been announced as to Jones & Laughlin's intentions as to opening their Grant mine, Mesaba range, by extensive stripping, but they will probably undertake the work without aid of contractors, and will utilize more automatic machinery than has ever been put into a stripping job on that or any other Lake Superior range. There is little question but an opportunity exists to better the devices that have been in universal use by stripping contractors in the Lake region.

### The Kloman Mine Sold.

The old Kloman mine, Republic, has been sold to Chicago interests that are to erect steel works at Waukegon. It is a small property across the river from the Republic mine and has been idle since 1882, up to which time it had produced in a couple of brief periods of activity less than 100,000 tons of rather a lean specular ore, similar in appearance to that of Republic. In the early days diamond drilling failed to discover a continuation of ore lenses. The mine is opened 200 feet deep and about 1400 feet along the strike of the lens.

There is a good deal of inquiry for property on the various ranges and some activity, as these two sales indicate. Cleveland ore interests, that have from time to time been offered the cream of the lake region at ridiculously low prices, but have been afraid to tackle a sure thing, are now looking about and are not especially captious either as to quantity or quality. The change is very apparent and is refreshing to mining men and those that have been foresighted enough to step in and possess the best.

Beta mine, Menominee range, that has been under exploration by Pewabic interests for some time, is showing well, and indications are that it may be a considerable shipper next year. Exploration will be continued on as large a scale as the property will permit, and a few months will give an idea of its probable importance.

The old and long idle group of small mines west of Bessemer, Gogebic range, is active again. Puritan, not long ago transferred from Corrigan, McKinney & Co. to the Oliver Iron Mining Company, is active once more; Ottawa has shipped its old stock pile and is to be opened underground, and drill explorations are to be carried on, it is reported, at Amazon. There is a number of small and ill explored properties in this region along the center of T 47, R 46, that may reward persistent and skillful exploration, and it is probable that several of these will be taken up the coming season.

At Florence, Menominee range, Welsh exploration of the Commonwealth Company is coming to the dignity of a mine and will soon be equipped with a new and ample machinery plant, well housed, and exploration will be carried on all winter. The company's old Buckeye mine, near Florence, is to be unwatered and re-explored this season, with prospects of success.

### The Fayal Mine.

Fayal mine, Mesaba range, which in past years has carried the banner for greatest shipments, will this year fall under 1,000,000 tons, with a record of about 900,000. It is being extensively developed for another season. Its great open pit, from which millions of tons have been taken, has been idle all year, and its milling pit has been changed over from that system to square set, requiring time and diminishing shipments. The last of the enormous stock piles of the winter at Fayal and Adams, amounting in all to more than 1,100,000 tons, will have been moved out by the close of the week. During the coming winter the extensive and elaborate system of trackage of the Duluth & Iron Range road, south of pit No. 1, will be taken up and relaid elsewhere, and the new stripping to the south, which has been under way for the past two years, will be connected with old pit openings. When that has been done the pit will be able to make a shipment of as much tonnage annually as the management cares to send forward. No. 4 shaft, which has been going down in rock, is being connected up with workings of the other shafts, and will be equipped with

steel shaft house and a splendid hoisting plant during the winter.

I have mentioned in this letter only a few of the more prominent operations that are to be conducted throughout the lake region this winter in developmental work at mines. There are scores of smaller properties where much work is planned, and there are many new explorations liable to be undertaken, not only on the Mesaba, which has been the favorite field for exploration, but elsewhere. The winter will be exceedingly lively and important, and is already showing a tremendous contrast to that of 12 months ago. Then the feeling was one of depression, and the temperament of iron ore operators, notably mercurial, was pessimistic in the extreme. Golden opportunities that for the past year have presented themselves to interests needing iron ores have been disregarded and laughed at, though no one believed the depressed feeling of the time to be more than momentary, and the indications are that the search for ore, that was halted for the time being, will be renewed with as great vigor as ever. D. E. W.

## The Elyria Gas Engine.

A distinguishing feature of the gas engine built by the Elyria Gas Engine Company, Elyria, Ohio, in sizes of from 10 horse-power up, is that either gas or gasoline may be used as fuel, and the change from one to the other may be made without stopping the engine. Another peculiar feature is that it is so designed and arranged as to require no readjusting when worn by service. It is a four-cycle engine of comparatively simple construction and few parts. The manufacturer states that in designing this engine the principles of steam engine construction were applied wherever they could be of advantage in the construction of a gas engine. The principal claims made for the engine are that it maintains close speed regulation and that it requires only a reasonable amount of attention and care. Symmetry of design is another feature of individuality in this engine. In its manufacture all parts are made from templets, jigs and gauges, insuring interchangeability.

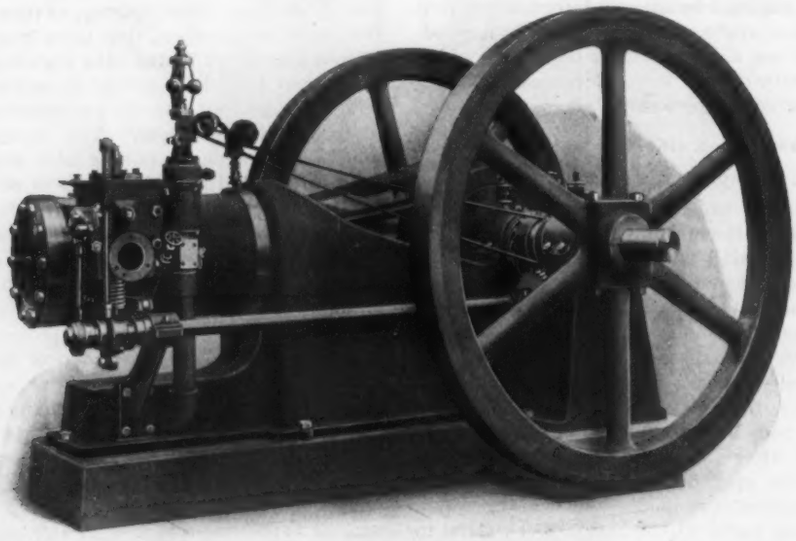


Fig. 1.—View of Belting Side of the Elyria Gas Engine.

While the engine does not occupy a larger floor space than is customarily allowed to other engines of equivalent power the frame has a much longer foundation bearing than usual. In the disposition of material in the frame the aim was to place the greater part of the weight where it would best withstand the strain caused by the force of the explosions. The crank shaft bearings are contained in the one frame casting, so that they cannot get out of alignment. This construction also permits placing the fly wheels close to the bearings, with no gears interposed. The right hand fly wheel—that is, the near one in the illustration Fig. 1—is always the one from which the belt is taken. This causes the belt pull to be borne by the outer bearing, while the bearings on each side of the crank receive the force of the explosions. The crank shaft bearings are set at an angle of 45 degrees to diminish the strain on the caps. The frame is bored and faced to fit an end face and cylindrical projection on the cylinder casting. Studs are screwed into the cylinder casting and project through the housing to receive nuts on the inside of the latter. This means of fastening the cylinder to the frame permits free expansion in all directions.

The chamber containing the valves is a separate casting from the cylinder. It is fastened to the cylinder by four studs and is thoroughly water jacketed. To keep the valves and cylinder at even temperature a portion of the cooling water is passed through the valve chamber jacket to the cylinder jacket. The inlet and exhaust valves open into the same chamber and are placed one above the other, the exhaust valve being beneath. The exhaust valve seat is in one piece with the chamber casting. The inlet valve is seated on a separate casting, which is inserted in the top of the main chamber, the joint between the two being ground and held tight by four screws. By removing these screws the inlet valve and seat may be withdrawn. By removing the pin from the stem of the exhaust valve the latter may also be withdrawn through the opening for the inlet valve casting. Both valves are of poppet type, and work up and down vertically, so that there is no excessive wear on the sides of the valve stems. The valves are opened positively by cams instead of depending upon suction, and are closed by springs.

The engine speed is regulated by throttling the amount of mixture of air and gas admitted. This system has the advantage of preventing a greater amount of gas and air being drawn into the cylinder at each stroke than is required to maintain a normal speed, and the explosions are regular in time, which is not the case with the "hit-and-miss" system of governing. At no load the governor almost closes the throttle and the explosions are very light. When the speed diminishes with the throwing on of the load the governor increases the amount of the mixture admitted, thus increasing the force of the explosions. The proper proportion of gas to air in the mixture may be regulated while the engine is running by varying the volume of gas admitted. The suitable ratio once obtained remains constant, as the governor automatically regulates both gas and air. The governor valve may be taken out for cleaning by removing the screws.

The piston is of the trunk pattern, and has a large bearing surface. It may be withdrawn through the crank end of the cylinder without disturbing the cylinder head. The pin which serves as a bearing for the end of

the connecting rod is of steel, case hardened and ground to size, and is held in position by two set screws.

The crank shaft is a one-piece steel forging drawn from the billet and machined to gauge. Counterbalancing disks, bored to fit the shaft and having pockets to receive the crank arms, are secured to it by large set screws. This method of placing the counterbalances brings them directly in line with the weight to be balanced, and does away with bending strain on the shaft.

power and economy of the engine, especially w ıen different kinds of fuel are used.

The cylinder head is thoroughly water jacketed, and is arranged so that the force of the explosions do not come directly against the packing interposed between the cylinder and the head, which makes it much easier to keep the head joint tight. All engines of 15 horse-power and over are provided with automatic starting apparatus consisting of an air compressor and storage tank. The

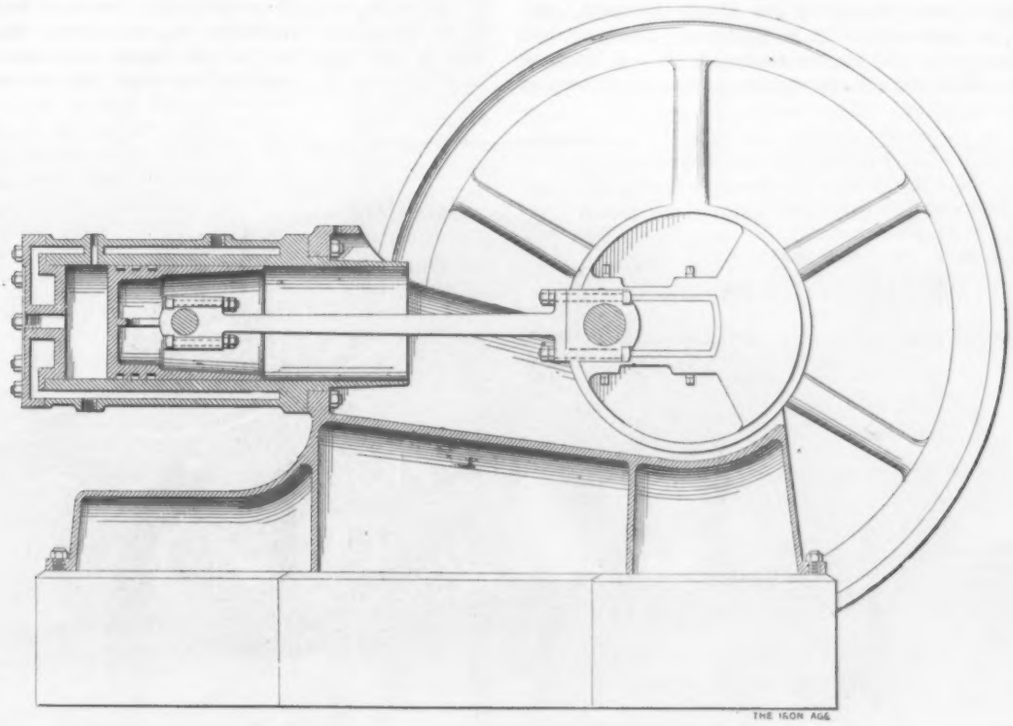



Fig. 2.—Longitudinal Section of the Elyria Gas Engine.

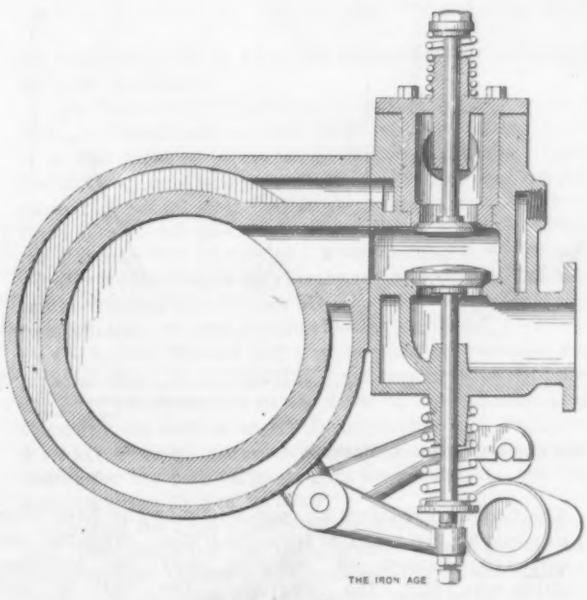



Fig. 3.—Cross Section through the Cylinder and Inlet and Exhaust Valves.

Ignition is by means of an electric spark, the plug for which is placed in the valve chamber between the inlet and exhaust valve, where it has the benefit of the cooling effect of the incoming air, thereby prolonging the life of the sparking points. Provision is made for changing the time of ignition while the engine is running. This is important, since in starting it is desirable to ignite later in the stroke than when full speed is attained, and the time of ignition very materially affects both the air pipe connection from the tanks is made through an opening provided in the center of the cylinder head. The cylinder wall is extra heavy at the points where the strain is most severe. The water jacket which surrounds the cylinder is arranged so that it may be cleaned without removing the head. All the working parts are on the outside of the cylinder and are few in number.

All the principal rubbing parts are lubricated automatically, and there is no waste of the oil supply to the journals. Sight feed cups supply the cylinders, and but little attention is required by the lubricating devices. Before the engines are shipped they are tested, not only for fuel consumption and ability to carry the rated load, but to insure that they do not lose perceptibly in efficiency with a 20 per cent. overload.

**Duty on Loom Heddles.**—A hearing was held before General Appraiser Fischer, New York, on November 10 to determine the dutiable classification of certain loom heddles made of wire imported by Jacob Walder of New York. The heddles had been classified by the collector as articles manufactured from flat wire at 45 per cent. plus 1¼ cents a pound. The importer claimed that they were manufactured from round wire and were therefore dutiable at 1¼, 1½ or 2 cents a pound plus 1¼ cents. The nature of the articles was such that it was difficult to tell from an inspection of them what kind of wire was used in their manufacture. Testimony on both sides was presented and an adjournment was taken till November 25, when it will be continued in Philadelphia, where the Government has several witnesses.

There has been reprinted in pamphlet form an interesting paper read by C. W. Waidner of Pittsburgh before the Engineers' Society of Western Pennsylvania, entitled "Methods of Pyrometry."

## The New England Foundrymen's Association.

The monthly meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, on November 9, with President B. M. Shaw in the chair. The Athol Machine Company, Athol, Mass., and the National Steel Foundry Company, New Haven, Conn., were admitted to membership. A committee appointed to prepare resolutions on the death of Archer Brown, consisting of John Magee of the Magee Furnace Company, W. B. Snow of the B. F. Sturtevant Company and A. L. Lovejoy of the Becker-Brainard Milling Machine Company, presented an appropriate memorial expressing the deep regret of the members of the association at the untimely death of this valued member. Interesting addresses were made by Herbert E. Field, Pittsburgh, Pa., on "The Chemistry of Iron," and by Dr. Richard Moldenke, Watchung, N. J., secretary of the American Foundrymen's Association, on the same subject. It was announced that the Executive Committee had decided to extend an invitation to the Philadelphia and Pittsburgh associations to meet with the association at the annual meeting in January, full particulars to be given later. The usual dinner was served.

The bi-monthly settlement of the puddling and bar iron scales was made at Youngstown, Ohio, last week. Figures submitted by James H. Nutt, labor commissioner of Republic Iron and Steel Company, showed that average selling price of iron bars shipped during September and October did not warrant any advance in the puddling and bar iron scales for November and December, which will remain on the basis of $4.90 for boiling on a 1.2-cent card rate and no change in the official scale.

## The Summers Gravity Dump Car

A new self dumping hopper bottom car, which will discharge its load between the rails, or all on either side of the track, or part on each side, has been invented by E. W. Summers, Pittsburgh, Pa. The dump cars heretofore in use have been of two kinds only, one dumping only between the rails and the other only on both sides.

Fig. 1 —General View of the Summers Dumping Car.

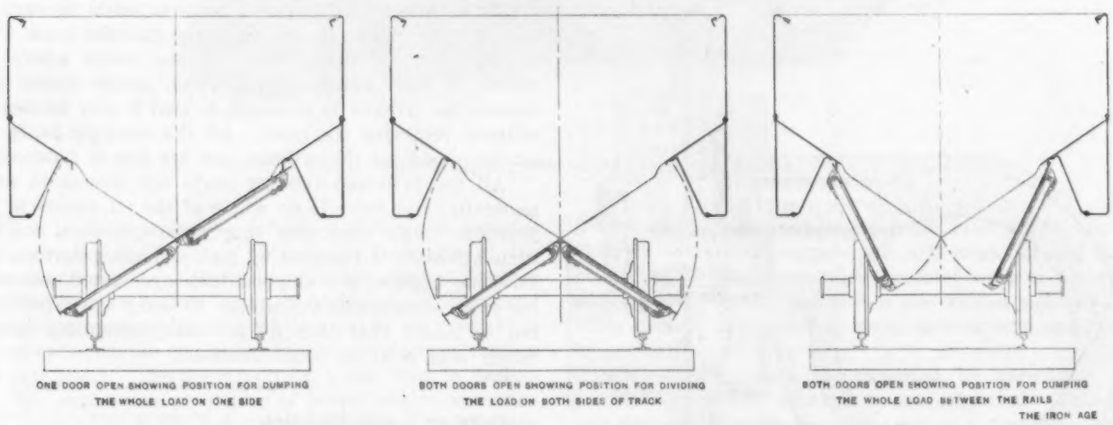

ONE DOOR OPEN SHOWING POSITION FOR DUMPING THE WHOLE LOAD ON ONE SIDE
BOTH DOORS OPEN SHOWING POSITION FOR DIVIDING THE LOAD ON BOTH SIDES OF TRACK
BOTH DOORS OPEN SHOWING POSITION FOR DUMPING THE WHOLE LOAD BETWEEN THE RAILS
THE IRON AGE

Fig. 2 —Diagrams Illustrating the Three Manners of Dumping.

The first kind required an open trestle or else hand labor in removing the material from the tracks. With this new car the manner of dumping may be accommodated to suit the location. The car is constructed entirely of steel with the exception of the footboards at either end for the trainmen. The general appearance of the car is shown in Fig. 1. Figs. 2 and 3 illustrate the mechanical provisions for dumping. The dumping feature it will be seen comprises two large interchangeable doors which form a trough shaped bottom between the trucks. The end portions of the car are provided with slanting floors to direct the material toward the openings. The openings are large and any material that can be handled by a steam shovel will pass out easily. Each door is supported by two heavy chains at both its inner and outer edges. These chains are controlled by heavy worm gearing and shafting, which are operated from the platform

at either end of the cars. The mechanism is protected in the hollow box portions of the car which form the stiffening girders. The car has no center sills, but the side girders are tied together by deep cross beams.

To discharge the load in the center, the operator turns the crank shown near the center of the end of the car. This lowers the inner edges of the doors, causing them to hinge about their outer edges. The amount of opening, or the angle of the doors, may be adjusted as desired according to the material handled, so that none falls upon or outside of the rails. Being operated through worm gearing the doors will hold any position and no latch mechanism is necessary to hold them closed. After the load is dumped the doors are closed by turning the crank in the opposite direction. To discharge the load from one or both sides the cranks on the corresponding sides of the car are operated independently or simultaneously in the same manner. The door or doors then revolving about their inner edges open outward, as shown in Fig. 1. With the doors in any position no part projects beyond the clearance lines. No adjustment is necessary before loading the car to prepare it for any particular manner of unloading. Fender plates at each end of the door openings guide the material chuting down

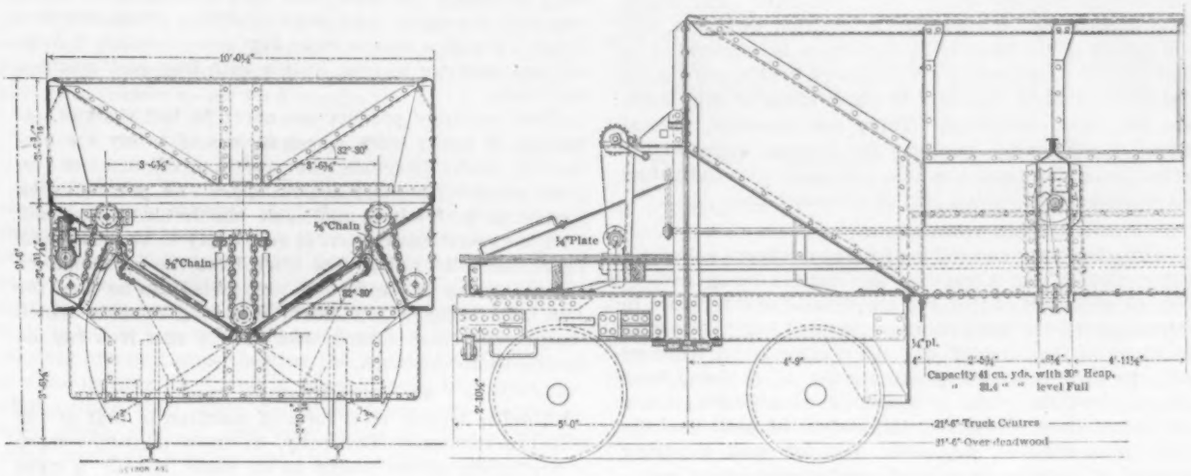



Fig. 3.—End View and Half Side View, Showing the Dumping Mechanism.

the doors and plow it when the car moves so that it does not foul the trucks.

Any load can be discharged in any or all of the manners mentioned, and no part of it will fall on the rails. It is also possible to discharge the load and again close the doors without stopping the train. It has been demonstrated by actual tests that it is possible to unload one of these cars in considerably less than one minute with the car standing still or moving. Free running material may usually be discharged in from 40 to 45 seconds. The load can be dumped by one man and the doors replaced within two minutes. It is stated that the saving in labor effected by the use of this car will pay for its first cost in a few months' time. For some time past experiments with this car have been going on at the mills of the Carnegie Steel Company, as well as on the Pennsylvania and Baltimore & Ohio railroads. Other steel companies have also placed orders for the cars. The patents are owned and the cars manufactured by the inventor.

Cars of the type illustrated have been in service since last June handling pig iron, broken stone, ashes, coal, blast furnace cinder, gravel and general refuse material. They have a capacity of 100,000 pounds or 40 cubic yards; are 31 feet 6 inches long, 9 feet 6 inches high and weigh 39,600 pounds.

The Government crop report issued November 10 makes the yield of corn, as indicated by the latest returns, 2,453,000,000 bushels. It is the second largest corn crop on record, that of 1902 having been 70,000,000 bushels larger. An interesting feature of this last report is the comparatively slight deterioration shown since August, when the Government estimate indicated a crop of 2,564,800,000 bushels.

## The Dutiability of Commissions.

A new phase of the question of the dutiability of commissions paid to other persons than the seller of the goods was ruled upon November 11 by the Board of United States General Appraisers, and a new principle in customs law, of interest to importers of all classes of goods, was laid down. The decision was written by Judge Byron S. Waite and overruled a protest by Thomas Irwin & Sons of New York against the classification of an importation of pocket knives under the clause of paragraph 153 of the Tariff law, providing a duty of 20 cents each and 40 per cent. ad valorem on pocket knives valued at more than $3 a dozen. The importers claimed that the knives were worth between $1.25 and $3 a dozen, and were therefore under the same paragraph dutiable at 10 cents each and 40 per cent.

The facts, about which there was no dispute, were that the knives as invoiced were worth a little less than $3 a dozen, but that the importers had added on entry an item of 5 per cent. commission paid to a purchasing agent abroad which the Government concedes is nondutiable. This addition made the entered value a little more than $3 a dozen. Judge Waite, in writing the decision, says:

Section 7 of the Customs Administrative act of June 10, 1890, provides that duty shall not . . . be assessed in any case upon an amount less than the invoice or entered value. Such entered value, when higher than the invoice, is not only the minimum value upon which ad valorem duties must be assessed, but, as appears to have been settled, will determine the classification of the goods, rather than any lower invoice or appraised value when the classification is dependent upon or regulated in any manner by their value.

To the end that customs officials may have the benefit of an accurate statement of the foreign market value from importers, said Section 7 imposes penalties for a failure to declare the true value upon entry. If the invoice value is not sufficiently high, importers, with some exceptions, are, by the same section, permitted to raise it by addition in the entry and avoid penalty. Such declared value then becomes binding upon the importer and duties will not be assessed upon a less amount. It is plain that if the value could be stated tentatively in the entry and withdrawn when found to exceed the appraised value, it would encourage guesswork and defeat the object of the law. If a nondutiable item on an invoice is included in the entered value through manifest clerical error, or under duress, the importer, it would seem, is not bound by his act, but a voluntary addition must of necessity be held conclusive.

In the case before us no explanation of the addition is offered, and we think it must be assumed to have been voluntary. There is nothing in the record to suggest duress, or that the addition of commissions was not deliberately made by the importer in the belief that the in-

voice value was too low. The case is similar in principle to Vantine *vs.* United States, *supra*, where nondutiable transportation charges were held to be properly a part of the entered or dutiable value when voluntarily included by the importer upon entry.

## Forging Machinery.*

BY JAMES H. BAKER.

Forging machinery consists generally of hammers, forging rolls and presses, and the combinations growing out of these. We leave cold drawing out, as it occupies an intermediate field between forging and machine work, and consider only hot work. From a stone in the hand of a man to the hammer with a head weighing 125 tons has been a long road. In power hammers we have trip hammers driven by cams of different kinds, helve hammers and various types of upright hammers driven by belts through eccentrics, &c., steam hammers of both the forge and drop variety, hammer heads raised by a crank lift, or by a board worked between friction rolls, and the hammer head allowed to drop on the work. The last two named are strictly drop hammers. The steam drop hammer has the hammer head lifted by steam, and the falling of the head in modern types is accelerated by live steam. Compressed air hammers, which are taking the place of hand hammers in many kinds of cold work, are not here considered. There are, however, several kinds of air driven hammers for forging, some on the principle of the steam hammer, and some with individual air compressors forming part of the machines.

### Hammers.

Drop hammers as used for forging are those suited for using dies having a matrix, this matrix being usually formed with part of it in the upper and the other part in the lower die, the work being compressed into this matrix by blows of the hammer, and the surplus metal trimmed off. In drop hammers where strokes of uniform force are required the crank or board lift is desirable. These are practical up to a reasonable weight of head, and for one stroke work do very well. But for work requiring strokes of varying force, and particularly heavy work, the steam drop hammer is doubtless superior. Board drops are largely used in the Eastern States, while here and in the West steam drops are mostly used. The difference between steam drop and steam forge hammers is in the valves and in the arrangement of the guides. Belt transmission of power from an economical engine is cheaper than power derived direct from the steam cylinder on a hammer. Engineers know this, but the point is mentioned for the information of the beginner, as are some other simple points.

A steam forge hammer having a head weighing 125 tons falling a good distance, with steam in a correspondingly large cylinder driving it, is something very powerful. Steam forge hammers are used much as a blacksmith works, the hammer doing the striking instead of the human helper, having, of course, the proper appliances for handling heavy work. The trip hammer formerly was much used for forging hoe blades, fork tines and similar work in hard steel, because of its simplicity and durability, and with various forms of driving cams or trips this style of hammer is much used in chain welding, bolt heading and innumerable other kinds of machine forging. For light work, which can be handled rapidly, and which needs to be turned as the forging goes on, the belt driven hammer is preferable. This class of hammers reached and passed their limit at car axles.

While the hammer will always be largely used, it is being superseded on many articles by the forging press and forging rolls. This change in favor of the press is seen in the manufacture of armor plate and certain other heavy forgings. It may be risky to say that anything mechanical has reached its limit in size, but I believe that the 125-ton hammer reached and passed it. The forging press in its lighter forms is used for making pick eyes, hand hammers, chisels, sledges and for forging many other articles formerly made under the hammer.

As to the limit in size of drop hammers, we now have them with heads as large as 5 tons, and I think that this is about their limit for general work. The shock in drop hammer work is very great, and repairs correspondingly so, and an additional source of trouble is that a good deal of work often comes at one side of the vertical line of the piston rod, and this is hard on piston rods and guides. I think the forging press in connection with the drop hammer will tend to remove this difficulty.

### Forging Rolls.

Forging rolls are now used for making many articles in whole or in part formerly made on hammers, such as fork tines, brake shoe keys, horse nails, harrow disks, sucker rod joint straps, tapering plow beams, ends of springs, &c. For instance, here is a piece of work in which a bar 1 x ½ inch had 7½ inches of it drawn to a length of 16 inches at a single pass in eccentric rolls, most of its cross section being reduced to ⅛ x 1⅝ inches, the actual time of contact being less than one-half second. The same work under a hammer would, as you can easily judge, have taken many times as long. The die face line of travel in these rolls was 14 inches diameter and the speed very high. "Strike while the iron is hot" is still a maxim to be kept ever in mind, if forging processes are to keep in line with improved machine tool work.

But quality of product can never be lost sight of, especially in heavy work where factors of safety are necessarily less, therefore the question of hammer *vs.* press must be decided accordingly. The press forging method so far as it is applicable has decidedly the lead. This is so well known that it needs only to be mentioned. Press and roll forging very often have the advantage of a great saving in die cost, as cast metal can be used for dies. Yesterday I saw heavy punching done in which the punch was of forged steel with a cast iron cap on its end to do the work.

### The Bolt Heading Type.

Another largely used form of machine is that of the bolt heading type. Generally, in these machines there is a gripping device placed at an angle, usually a right angle to the line of travel of the pressing or striking tool. In the larger sizes they are often called upsetting machines, forging machines, bulldozers, &c. They are driven by hydraulic or pneumatic means, by gearing actuated by electric motors or by transmission of power through belts. The largest gear driven machine I know of will put a head on a 4-inch round bar at one stroke, but I am informed that others still larger are planned or building. One would not think of using hydraulic machines to head ¼-inch bolts, while nothing but hydraulic means would be thought of for drawing a 12-inch tube. In certain cases the question of rapid *vs.* slow motion should be the deciding factor, when considering various kinds of punching, bending or forging. In bending machines the foregoing description of forging machines of the bolt heading type will hold good. Where the stroke of the traveling die is rapid and has to be of uniform length the geared machine should be used, if possible. If the work is of such nature as to have an uneven amount of metal under the die at its finish it is better to use pneumatic or hydraulic machines. For instance, you can make certain kinds of bends in bars of varying thickness without changing the set of the dies by using such means. Also, you can have a long stroke machine and yet make quite short strokes when needed.

Some forgings can be most economically made by a combination of methods. Here is a shovel socket which was produced nicely by such combination. The flat end was made in a drop hammer, the short tube was welded in forging rolls, that, at the same time and heat, drew the walls of the tube at one end to less than one-half their thickness at the other end, and then a rapidly striking hammer was used to weld the heavy end of the tube to the drop forged part.

### Heating.

Proper heating is an important factor in forging, and should, perhaps, have mention here. To illustrate: If

* Paper read before the Engineers' Society of Western Pennsylvania, Pittsburgh, November 1.

you wished to make an upset 4 inches long of 2 inches thickness on the end of a bar 1½ inches thick, the back part of the metal should be much the hottest, or the front part of the holding die will fill first, and the back part will not fill. Improper heating will allow oxidation, and make trouble in rough, bad welding, &c. We have heard a good deal about some kinds of fuel making iron softer and easier to work. Now, I do not believe there is anything of this in the fuel, *per se*, and yet there can be no doubt as to some heating being better than others. This is due to unsuitable burning devices, for it all seems to be a question of how far a perfect mixing of oxygen and carbon can be accomplished, and at the same time advantageously applied. Repeated experiments in welding chain links showed on an average that 100 pounds of links heated in the blaze of coke lost seven-eighths of 1 per cent. in weight, while the loss when heated in natural gas was 2¼ per cent. This simply shows that free oxygen found its way to the metal more freely in the gas heating. I need only mention the fact of inclosing bright articles in a sealed box and heating them by applying the heat to the outside of the inclosure as an example of what can be done without scaling when oxygen is practically kept out of reach. Producer gas for light work is used, but the matter has not been carried far enough in my opinion to determine its value. Petroleum and its products are used, but it takes rather elaborate devices to get good results.

### Welding.

In welding we should distinguish between electric welding, which consists in fusing or melting the surfaces together, and welding proper as generally understood. In electric welding the metal is often brought almost to the ingot condition, and when the article is in such form as to allow of little or no subsequent work on it, it is left in a more or less honeycombed condition. By welding proper I mean heating the metal to a degree below the melting point, and in cases of particular work or high carbon steel much below it, freeing the surfaces from oxide, dirt, &c., and hammering or pressing these clean surfaces together until the weld is made. This leaves the condition of the metal nearly as good as before. The press is not well adapted to making lap welds, the slow motion causing a comparatively long contact of the dies, thus cooling the thin part of the laps before the weld can be completed. Iron or steel need not be very hot to weld, the extra heat usually given serving the purpose of freeing the surfaces from oxide and keeping them free until the weld is made. The higher heat also softens the metal, making it easier to forge to size while welding, as in many cases it is difficult to get at the ends of the laps until the piece has been brought about to size. In soft steel and iron we generally bring on a bright sparkling heat, which melts the oxide. In high carbon steel this would not be allowable, and therefore a chemical agent, such as borax, is used to reduce the oxide to a fluid condition at a comparatively low heat.

Electric heating and welding has a field of its own, where nothing can equal it, such as uniting forms which do not admit of work after welding, joining light work, uniting the ends of pieces of pipe, &c., and welding where an electric current can be carried to the work while in place, which would be an impossibility with a forge fire. But it seems it is not used generally in work of large cross section, because, as usually practiced, the central portions get hotter than the outside edges of the section, owing to radiation, and therefore by the time the edges are hot enough the central portion is too hot. Thermit welding has some of the same limitations as electric. In fact, welding may be generally divided into two classes, one in which physical work is the principal agent, and the other in which it is absent, or only incidental.

Some years ago I saw a very interesting piece of work in automatically welding 12-inch pipe, the pipe being spirally bent, the edges heated and welded in a continuous process from start to finish. But it proved to be troublesome, and did not stop for a defective spot in the weld, and I believe has been discontinued. In this work water gas was used after scrubbing out the sulphur, and the fuel gas used for the boilers.

### Automatic Working of Metal

Automatic working of metal has been carried to a high degree of efficiency in cold work, but in hot work has not advanced much, the reason mostly being in the fact that one of the fundamentals in automatic work is that the product of each separate operation must be uniform in order that feeding or changing devices may transfer the work to the next form or die. The difficulty is that the heating may be irregular, the loss by scaling greater or less, and therefore the action of a given operation will not produce a uniform product. But in articles which can be grasped at one end, and worked from this hold, automatic work is practical in hot metal. Hence, we see it done in the manufacture of rivets, spikes, horse nails, &c. It would be worth your while to see the automatic roll forging of horse nails.

One of the most troublesome questions is how to group machines. In a shop where a variety of articles are made it is next to impossible to do this so effectually that the sequence of operations will not sometimes be interfered with. Where the articles pass through different machines they should be so placed that the work may pass directly from one machine to the next. On the other hand, when single machines are turning out a finished product each class of machine may be set together.

---

**The Produce Exchange Pig Iron Warrant Department.**—The New York Produce Exchange rules regulating transactions in pig iron warrants became effective November 14. Announcement is made that the following commission houses are prepared to execute orders for buying and selling warrants for cash and future delivery: J. J. Archer, 61 Beekman street, New York; N. S. Bartlett & Co., Boston, Mass.; Ely Bernays, Produce Exchange, New York; W. P. Callaghan, Produce Exchange, New York; Henry Clews & Co., 13 and 15 Broad street, New York; Clearman & Stenson, Produce Exchange, New York; Cushing & Van Vliet, Produce Exchange, New York; F. V. Dare & Bro., Produce Exchange, New York; H. B. Day & Co., Produce Exchange, New York; Geo. B. Douglas, 29 Broadway, New York; R. W. Forbes & Son, Produce Exchange, New York; H. B. Hebert, Produce Exchange, New York; Herklotz, Corn & Co., 11-19 William street, New York; Howard M. Hooker, Pittsburgh, Pa.; Alexander Johnstone, Produce Exchange, New York; Kneeland & Co., Produce Exchange, New York; Knight & McDougal, Produce Exchange, New York; Ladenburg, Thalmann & Co., 25 Broad street, New York; Lane & Fox, Produce Exchange, New York; Lehman Brothers, 16 William street, New York; T. A. McIntyre & Co., 71 Broadway, New York; McGuire & Jenkins, 25 Whitehall street, New York; Maclaren & Muir, Produce Exchange, New York; Marshall, Spader & Co., 74 Broadway, New York; Milmine, Bodman & Co., Produce Exchange, New York; Morris & Wilmarth, 32 Broadway, New York; J. H. Parker & Co., Cotton Exchange, New York; Parker & McIntyre, Produce Exchange, New York; E. Pfarrius & Co., Produce Exchange, New York; Pritchard & McGourkey, Produce Exchange, New York; Power, Son & Co., Produce Exchange, New York; Rice, Quinby & Co., Produce Exchange, New York; Rogers, Brown & Co., 71 Broadway, New York; Rubins Brothers, Produce Exchange, New York; W. H. Story & Co., Produce Exchange, New York; R. H. Turle & Co., Produce Exchange, New York; Charles Child Wheeler, 45 Wall street, New York.

---

The Republic Iron & Steel Company has asked the Amalgamated Association for a special scale for the 18-inch mill at the Brown-Bonnell Works at Youngstown, Ohio. The Republic Company claims that on account of some modern machinery recently installed in this mill the output has been very much increased and for this reason it is entitled to special scale rates for the mill. A conference has been held with officials of the Amalgamated Association, but up to this time a settlement of the dispute has not been made.

# Progress in Naval Ordnance.

## First Annual Report of Rear-Admiral Mason.

WASHINGTON, D. C., November 15, 1904.—The first annual report of Rear-Admiral N. E. Mason, chief of the Bureau of Naval Ordnance, has been presented to the Secretary of the Navy and will be found to be of more than usual interest to manufacturers in the iron and steel trade. Through the courtesy of Admiral Mason, the correspondent of *The Iron Age* is enabled to present the following abstract of this interesting report:

### Deliveries of Armor.

The manufacture of armor during the past year has progressed in a satisfactory manner, the rate of deliveries continuing to show an increase over previous years. It is believed that a still further progressive increase will be maintained. In all ways the armor makers have displayed a most gratifying disposition to further the designs of the bureau, and to do all possible to overcome any delays. The improvement noted in the bureau's last report as under way at one of the armor plants has been recently completed, and the output of that company measurably increased. This increase will become more marked as the new installation can be brought more thoroughly into use. During the year, 14,848.80 tons of armor have been delivered, and it is gratifying to note the marked uniformity and excellence of this armor under ballistic test with capped projectiles.

Contracts under the award noted in the bureau's last report of the 16,809 tons of armor for the five battle ships authorized by Congress were entered into with the Midvale Steel Company on December 15, 1903; with the Bethlehem Steel Company on December 31, 1903, and with the Carnegie Steel Company on January 9, 1904. A ballistic plate, representing the first group of armor under these contracts, has already been successfully tested at Indian Head, and a plate to represent the second group will shortly be presented for test. The Midvale Steel Company has not as yet made any delivery of armor under its contract on December 15, 1903, nor has it submitted any experimental ballistic plates for test to determine the character of armor it may be able to produce, but it is believed that such an experimental plate or plates will be submitted during the current month.

The bureau has kept itself informed as to the progress being made by the Midvale Steel Company in the perfection of its facilities for the production of armor plate of all dimensions and is pleased to note that such progress is very satisfactory and all to be expected. The present facilities of this company limit the production of armor to plates of small dimensions only, but the additions to its plants that have been projected and are nearing completion will enable the production of plates of all usual dimensions. The full operation of these additions may be expected early in the ensuing year, and there is reasonable promise that the company may commence the delivery of armor under its contract some months prior to its requirements, which prescribes August next as the date of such commencement.

The bureau is prepared to issue advertisements for proposals for furnishing the 7922 tons of armor and appurtenances required for the one battle ship and two armored cruisers authorized by the last Congress as soon as contracts for the building of these vessels shall have been let.

### Projectiles.

Some difficulty has been experienced by the projectile manufacturers in furnishing shell which will meet the severe ballistic tests required by latest specifications. There is certainly no deterioration in the quality of armor plates, and the shell manufacturers find that they have a task of ever increasing difficulty to meet, and one which must tax their skill and ingenuity to the fullest extent. The bureau is convinced that the only logical service shell for naval ordnance is one which combines for its caliber the maximum power to penetrate face hardened armor without breaking up, and the capacity to carry a bursting charge sufficiently large to give an effective fragmentation. Shell combining these essential qualities have been obtained, and while they are necessarily more expensive than common shell or even than armor piercing shell of older design, their first cost, if adopted as the standard shell, is all that need be considered. They would be purchased and supplied to ships or placed in magazines, but would not be expended during times of peace. Cheap cast steel shell of the same form would be furnished for expenditure at target practice. The bureau has now a number of contracts in force for forged steel shell, and these will be completed before long. However, it will adopt the policy of supplying, in the allowance of ships, an increasing proportion of armor piercing shell of the larger calibers when shell of the new type are available.

### Powder.

Black powder for ignition and saluting purposes and for filling shell is still used, but its manufacture for other purposes has been wholly discontinued. All brown powder has been withdrawn from service and replaced with smokeless powder. Cordite, which was purchased during the Spanish War, has been withdrawn from service and will eventually be destroyed, as soon as the guns of foreign make, which alone now use it, have been replaced by guns of our navy pattern. Cordite has not proved satisfactory. Its ballistics are uncertain, and it is, in addition, objectionable on account of its great erosive effect on the bores of guns.

The manufacture of smokeless powder during the past year has in the main progressed satisfactorily, and about 800,000 pounds more has been delivered than during the preceding year. In addition, there have been manufactured several thousand pounds of experimental powder of different forms of grain. Every effort has been made to secure an improved, uniform and standard quality of smokeless powder from all manufacturers, and powder makers have made marked progress in meeting the bureau's requirements. Manufacturers have been discouraged from increasing the quantity of their output when improvement in its quality was considered more desirable.

### The Naval Gun Factory.

The Naval Gun Factory has been running night and day at full capacity, and, although good progress has been made, the congested condition of all work there gives assurance that its capacity is being over taxed and must, unless this capacity is materially increased, eventually result in failure to supply the ordnance outfits of ships in time to meet the demands of the contractors.

The following improvements are recommended to be made in the plant of the Naval Gun Factory, enumerated in the order of their importance:

| | | |
|---|---|---|
| A. | For the purchase and erection of new and improved machinery for existing shops | $150,000 |
| B. | Building for new sighting shop | 87,000 |
| | Machinery for this shop and installation of same | 150,000 |
| C. | New brass, iron and steel foundry, and foundry yard building | 300,170 |
| | Machinery, cupolas, furnaces, &c., for new brass, iron and steel foundry | 121,075 |
| D. | Building for gun shop for medium and small caliber guns | 190,800 |
| | Machinery | 368,930 |
| E. | New locomotive | 8,000 |
| F. | Third fourth of boilers and installation of the same—viz., five 300 horse-power similar to those now being installed | 50,000 |
| G. | New locomotive house | 61,747 |
| | Machinery for same | 12,000 |
| H. | New forge shop | 134,937 |
| | Forges, hammers, furnaces and machinery for new forge shop | 148,000 |
| I. | Extension of Building for east and west gun carriage and erecting shops | 334,448 |
| | Machinery for proposed new gun carriage and erecting shop extension | 660,232 |

The running of the machinery in the several machine shops for 16 to 24 hours per day necessarily increases the wear and tear, and it is absolutely necessary that this amount should be supplied to keep the present machinery in proper condition and provide new machinery upon the wearing out of the old. The present foundry is antiquated when compared with the progress and improve-

ments in other portions of the gun factory. It is entirely inadequate to meet the demands made upon it.

The present forge shop, although a model in its way and doing excellent work, is not large enough to meet the increasing demands upon it. There are many forgings which should be made at this yard from rough billets which the bureau is compelled to have made on the outside, paying exorbitant prices for the forgings, owing to the lack of facilities in the forge shop at the present time. Not only are these exorbitant prices paid, but great delay results in obtaining such forgings on requisitions from the contractors. W. L. C.

## Steam Engineering in the Navy.

### Annual Report of Chief Engineer Rae.

WASHINGTON, D. C., November 14, 1904.—The annual report of Admiral C. W. Rae, chief of the Bureau of Steam Engineering of the Navy Department, discloses some important plans of the bureau for experimental work of great interest to engineers and builders of all types of ships and engines. Through the courtesy of Secretary Morton *The Iron Age* is enabled to present an advance abstract of this report.

**Engineering Laboratory at Annapolis.**

During the past year the bureau has perfected plans for the establishment of a fully equipped experimental engineering station at Annapolis, where important tests will be made and many complicated problems worked out. It having been found impracticable to erect the building within the Naval Academy grounds, a site was selected across the Severn River, ½ mile from the Santee wharf and within 200 yards of the dredged 30-foot channel. Very little additional dredging will allow a battle ship to approach within 50 feet of the structure.

The many advantages of having the building close to deep water are obvious. Vessels of all kinds will be required at the Naval Academy for the instruction of the midshipmen. During the intervals when they are not needed for purposes of instruction they may be moored alongside the laboratory building and tests made of any new machines that happen to be on board. By this procedure a mass of reliable data will ultimately be accumulated concerning the working of every type of machine used in the naval service. These tests, being made on the machines when installed and under service conditions, will be of far greater value in many cases than similar tests made at the builders' works. For instance, the amount of coal which can be burned per square foot of grate in a boiler located in the hold of a gunboat, with the usual contracted hatches and ventilators masked by the boats and bridge screens, must be less than could be burned in the same boiler located on shore in an open boiler room. It is not improbable that experiments would show that in such cases it would be more economical to run continuously with artificial draft. Again, the efficiency of pumps with long suction and delivery pipes fitted with numerous bends, as they usually are when installed in naval vessels, must be quite different from the rated efficiency of the same pumps tested by the makers, and in many cases it would be found that the efficiency could be increased by slight changes in the installation. Such tests being made by the same corps of well equipped and disinterested observers would be very useful for purposes of comparison. Other advantages of proximity to deep water will be the facility with which a large stream can be supplied to the tank for testing screw propellers, the accessibility of water for testing circulating pumps of low lift but large volume capacity, and the convenience with which vessels bringing heavy machinery, coal and other supplies can discharge their cargoes.

The bureau having had the subject of an experiment station under consideration for a number of years, being able to take advantage of the knowledge acquired by the study of other engineering laboratories, and having definite plans with regard to the organization of the *personnel* as well as the character and scope of the work to be performed, it is believed that the building when completed will surpass in fitness for its purpose anything of the kind yet erected.

**Turbine Experiments.**

It is the desire of the bureau to start tests of turbine machinery as soon as possible. Specifications for a marine turbine engine suitable for the tests have been drawn up and a circular letter on the subject addressed to every probable bidder. It is expected that at least one suitable engine will be obtained at an early date.

The economic advantages to be derived from the use of superheated steam in any engine have been well known for years. The practical difficulties in the way have led to the abandonment of superheaters on our naval vessels. The construction of the turbine is such that it is better adapted for working with superheated steam than the reciprocating engine. There remain only minor difficulties, such as the corrosion of the superheaters and the destruction of the materials used for making steam joints. It appears highly probable that these obstacles can be removed and by a series of tests the best form of superheaters and steam joints determined.

One of the subjects which urgently needs investigation by practcical experiments is the corrosion of metals on shipboard. A series of well directed experiments, conducted in the light of the many other experiments made by various individuals in different parts of the civilized world, could hardly fail to disclose the law governing the cases as they occur in practice and to provide a remedy.

With the prospect of the introduction of turbine engines in naval vessels in the near future the bureau is confronted with the problem of designing screw propellers of a suitable form to run at much higher speeds than have been used heretofore. The first requirement of the case is a mass of accurate data which can be obtained only by testing propellers in a suitable tank designed for the purpose, where the speed can be perfectly controlled and the action closely watched. With these facilities there is no doubt that the resulting improvement in the design of screw propellers will be as great as has been the improvement in the design of ships' hulls since the establishment of the experimental tank at Washington Navy Yard.

The water tube boiler having established its superiority over the Scotch boiler for naval use, it remains to discover the best form of this boiler. This can best be done by comparative tests of various types of boilers, the test being made in each case by the same observers.

The bureau is continually being urged to adopt new inventions and alleged improvements. Untried appliances should not be used on ships engaged in actual service, and, on the other hand, the Government should not delay to avail itself of every useful invention or improvement that appears on the market. There is but one course to pursue, and that is to have these inventions and improvements thoroughly tested by persons familiar with the conditions as they exist on shipboard, and equipped with the necessary appliances for making tests that would be conclusive. Work of this kind will furnish constant employment for a number of experimenters, and repay many times over the money expended by decreasing the cost of maintenance of the fleet and increasing its efficiency. W. L. C.

The Commercial Club of Belleville, Ill., is carrying on an aggressive campaign for the purpose of acquainting the industral world with the merits of that city as a manufacturing center. Exceptional railroad facilities, cheap fuel, low cost of living for labor, absence of labor disturbances and nearness to St. Louis (14 miles) are presented as claims, and in addition to this the Commercial Club makes liberal terms to desirable industries. The city is served by the Illinois Central, the Louisville & Nashville, the Southern and the Baltimore & Ohio railroads and also by electric lines which offer quick transportation of both freight and passengers to and from St. Louis, and also tap large coal mining operations that surround the city. Literature setting forth the merits of Belleville as a manufacturing center has been prepared by the officers of the club.

## The Adriance New Type Combined Drawing and Reducing Press

The design of the new combined drawing and reducing press built by the Adriance Machine Works, Brooklyn, N. Y., is a radical departure from the toggle and cam type of presses which have been held in greatest favor for the past few years. The new press combines those elements which characterize a practical machine and embodies a great capacity for depth of draw compared with its stroke of crank. Independent cranks operate the plunger and movable lower die bed, which permits drawn shells to be pushed through or lifted out as occasion may require. In the following is given a brief description of the construction and operation of the press and a summary of its principal advantages.

The press comprises a main frame carrying two crank shafts, one located above the other. A large gear which is driven by the steel pinion on the power shaft in the rear of the press is keyed to the projecting right hand end of the lower crank shaft. This gear carries near its periphery, on its inner side, two pairs of antifriction rollers, which, as the gear revolves, alternately engage cam shaped pockets formed in a disk secured to the upper crank shaft, causing this shaft to make a half revolution for the passage of each set of rollers, with an interval of rest between each half revolution, during which the blank holder mechanism is disconnected from the driving mechanism, saving wear of the parts and consumption of power. The large gear also carries a concentric ring, or shoulder, on its inner side, which fills out the spaces between the two sets of rollers and serves to lock the upper disk against angular movement when not engaged by the rollers. The action of this mechanism is illustrated in Fig. 2.

The upper crank shaft imparts vertical motion to a slide which is gibbed to the main frame. Suspended from this slide are four steel rods, the lower ends of which support the bed block of the machine, upon which the lower, or female, die is secured. The blank holder is carried in the cross head rigidly fastened to the main frame of the press immediately below the lower crank shaft. This cross head has on the outside guide lugs for the four suspending rods, and on the inside a guideway for the slide, or plunger, which carries the drawing punch, this slide, or plunger, being operated by the lower crank shaft. The upper ends of the four suspending rods pass through adjusting nuts to compensate for different hights of dies, and the rods are geared together at their lower ends, causing them to revolve simultaneously and uniformly to maintain parallel relation between the dies. An independent adjusting nut on the lower end of each rod enables the operator to obtain a perfectly even draw or adjustment of the dies, dispensing with the necessity of using packing to produce that result.

A "knockout" is adjustably mounted in the center of the base plate, and is used when the shell drawn is larger at the upper end, necessitating its ejection through the top of the die instead of passing through it.

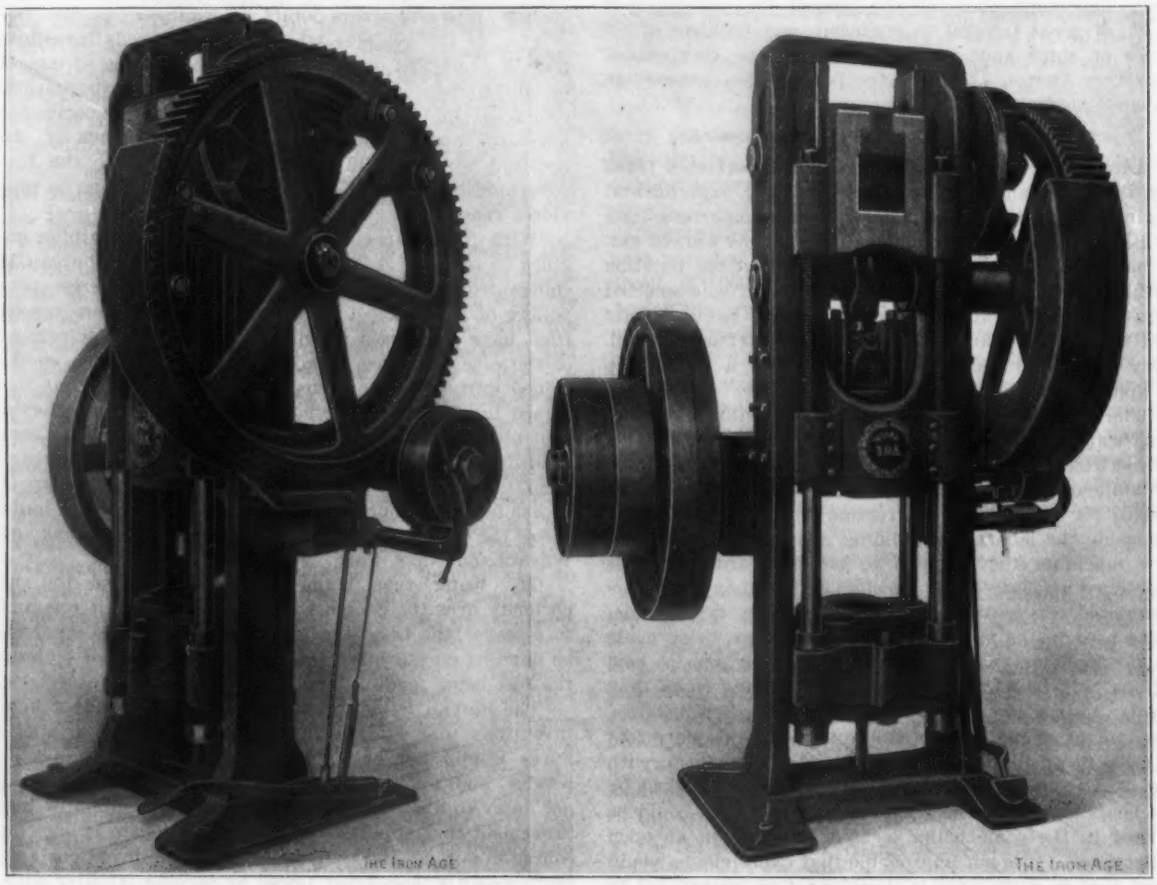



Fig. 1.—Two Views of the New Adriance Drawing and Reducing Press.

The relative position of the two sets of antifriction rollers on the larger gear are such that the blank holder and female die are held together, as shown in Fig. 2, during over 90 per cent. of the down stroke of the drawing plunger. For example: A press of No. 12A size having a plunger stroke of 7 inches will draw a shell over 6½ inches in depth, whereas in the ordinary type of drawing press, having the upper blank holder movable, a stroke of over 13 inches is required to accomplish the same depth of draw and permit the removal of the shell. As a result of this feature the new Adriance press can be run at nearly twice the revolutions per minute of such a long stroke press without increasing the working speed of the plunger. It will be seen that the working strain is carried by the four steel rods and not by the frame of the press. As the upper slide and lower bed are made of extra quality steel castings, breakage of these parts is practically impossible.

A powerful friction clutch of new design is used to engage the driving pinion, which is mounted loosely on the

power shaft, and is locked to the pinion when the treadle is depressed. The press is either automatically disengaged at the end of its up stroke or made to run continuously, as desired. A special provision for safety in the clutch is that all links and projecting parts are covered, and that when the press is disengaged no visible part of it is in motion, the continuously revolving member being incased by the disengaged member. This makes it impossible for persons to be caught while working around the press or while adjusting or oiling the clutch.

Among the advantages of the press are that it is a balanced structure in which strain is removed from the cast iron frame and transferred to the steel parts, making the press practically safe against breakage and materially reducing the weight; that it will run at nearly twice the revolutions of an ordinary drawing press; that the personal safety of the operatives is provided for; that nearly the full stroke of the plunger can be utilized for reducing and drawing operations; that power is saved by disconnecting the blank holder mechansm while the press is drawing, and that the plunger begins its work slowly and increases as it advances, finishing the hardest part of the draw before reaching its greatest velocity. In practice it has been found that the speed of the drawing plunger is limited by the tendency of the metal blank to heat and tear, caused by the friction in drawing. As the Adriance press may be run at nearly double the number of revolutions per minute of the usual types without increasing the speed of the plunger, the output is proportionately greater. When in the open position the dies stop momentarily, which facilitates feeding the blanks to the press. A full line of these presses is built in sizes ranging in weight from 6600 to 150,000 pounds.

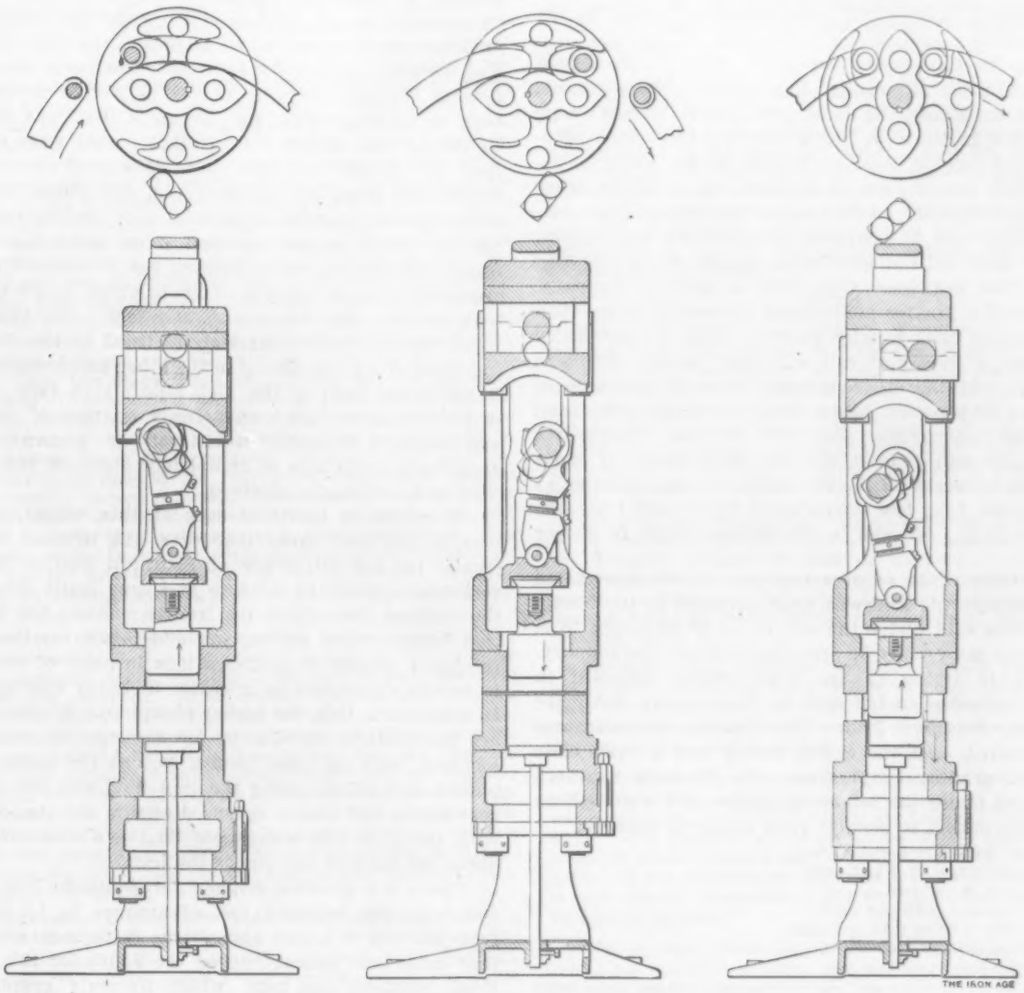



Fig. 2.—Three Positions of the Cam on the Upper Crank Shaft and the Die Blocks During One Revolution.

Henry A. Hitner's Sons, Aramingo avenue and Huntingdon street, Philadelphia, have recently erected what is believed to be the most modern plant of its kind in the United States for handling all kinds of scrap iron, steel, &c. They have just closed a very large contract with the Brooklyn Elevated Railroad Company, purchasing about 2 miles of their elevated structure running from Fulton Ferry to Myrtle avenue, which includes hundreds of tons of angle iron, I-beams, channels, box and lattice columns, plate and lattice girders, of all sizes and dimensions. It is the intention of the firm to begin dismantling and shipping the above material in course of the next ten days. The firm has also acquired two monitors from the United States Government, the Nehant and Jason, which are now being dismantled in Philadelphia; also a British battle ship, the Hotspur, which is now being dismantled in Boston. Messrs. Hitner's Sons have facilities in their new plant for cutting up boilers and locomotives by air, reducing them to very small pieces. The plant is equipped with a 25-ton electric traveling crane running the full length of the main building, which is 550 feet long, the plant covering about 4 acres in all. They also have wheel presses, pipe cutting and threading machines, beam shears, six pair of shears for cutting up scrap iron, one being the largest type ever built for the purpose of cutting up plates up to 1½ inches thick, bars 7 inches round. They are also equipped with their own electric light plant, their own machine and boiler shops, and, in fact, everything necessary for the economical handling of such material as above named.

Capt. T. S. Baldwin's airship flew through the air at St. Louis on October 25, in the face of a 10-mile breeze, at the hight of 2000 feet, for a distance of about 10 miles, when the breaking of a chain caused the operator to bring the craft to the ground.

# Notes on Southern Pig Iron.*

BY ELIOT A. KEBLER, PITTSBURGH, PA.

At first sight it seems rather presumptuous to discuss Southern iron before foundrymen of this district, for it is well known that about one-fourth of all the pig iron in the United States is made in this county, and that Alabama iron can only reach Pittsburgh by paying a freight rate of $4.25, while from the Virginia field a freight of $2.55 must be paid. When we look into this more particularly, however, we find that only one furnace in this county is now making foundry iron for sale, and that during 1903, according to the statistics published by James M. Swank, the recognized authority, the South produced 2,138,125 gross tons of foundry pig iron out of the 4,409,023 tons produced in the entire United States; in other words, they furnish 49 per cent., or practically half, of the foundry iron produced in the United States.

Owing to the great variety of ores which extend through Virginia, Kentucky, Tennessee, North Carolina, Alabama and Texas, the South produces the widest range of iron; for instance, in North Carolina the lowest phosphorus and sulphur iron we believe in the world is being smelted, running on an average, say, 0.025 in phosphorus and sulphur. In Alabama a low silicon iron averaging about 0.40 is produced, from which the highest grade of basic rails is now being turned out in the steel works of the Tennessee, Coal, Iron & Railway Company. These stand a greater punishment without fracture than the Bessemer rails usually used; in fact, a blow which will break a Bessemer rail will only bend a Southern basic rail. At the other extreme, there is produced in Virginia a 50 per cent. silicon iron, and further South an 80 per cent. manganese and a 20 per cent. phosphorus, so that one can readily see the wide range of irons which can be smelted from the Southern ores, running, as will be noted, from low silicon up to 50 per cent.; in manganese, 0.25 to 0.80, and in phosphorus, 0.025 to 20 per cent.

This wide range of ores was not at all appreciated when Southern pig iron was first marketed in the North, and all was sold under the one name of Southern iron. The trouble can readily be appreciated which the foundrymen had in trying to use irons widely different in chemical constitution but sold to them simply under the one name, Southern iron. This trouble, however, has been obviated, and the South to-day has a very close system of grading by fracture. By fracture Southern iron is sold under the following grades, and while silicon is not guaranteed it usually runs about as follows:

No. 1 silvery, 4 to 5 per cent.
No. 2 silvery, 3 to 4 per cent.
No. 1 soft, 3 per cent.
No. 1 foundry, 2.75 per cent.
No. 2 soft, 2.50 to 2.75 per cent.
No. 2 foundry, 2.35 per cent.
No. 3 foundry, 1.90 per cent.
No. 4 foundry, 1.75 per cent., although it often runs much higher.
Gray forge, 1.35 per cent.
Mottled, 1 per cent.
White, 0.50 per cent.

The silvery, soft and No. 4 foundry are distinctively Southern grades and are distinguished by the dense silvery appearance of the fracture, which to those not familiar with the Southern irons is so deceptive that foundrymen have added high silicon to them, thinking that the fracture denoted low instead of high silicon.

As stated, the above silicons are merely approximate and no guarantee of the analysis is made when iron is sold by fracture.

Some of the leading furnaces in the South, however, are also willing to sell strictly by analysis, guaranteeing as follows:

Silicon, over 3 per cent.; sulphur, not over 0.05 per cent.
Silicon, 2.50 to 3 per cent.; sulphur, not over 0.05 per cent.
Silicon, 2 to 2.50 per cent.; sulphur, not over 0.05 or 0.075 per cent.
Silicon, 1.50 per cent. and under; sulphur, not over 0.075 per cent.

These, of course, are the maximum sulphur contents, and the sulphur which is shipped ordinarily runs less than half of the sulphur guarantee.

In regard to using Southern iron, the standard Alabama grades ordinarily contain from 0.75 to 0.95 phosphorus, and as it is currently conceded that this percentage of phosphorus does not materially weaken the pig, these irons can be used for general work without any admixture of lower phosphorus iron. Where especially strong castings are required, results can be obtained by reducing the silicon or using a lower phosphorus pig in the mix (which can also be secured from the South).

In fact, at the foundry with which we were connected for many years, in addition to some 60,000 tons of pipe, there were also cast some 20,000 tons yearly of high grade machinery and special castings without the admixture of any Northern iron. Of course where one has iron made from low phosphorus ores to draw from, it is simpler to make his mixture partly with these. From our experience, we believe best results are obtained in ordinary work by mixing irons made from different ores. For instance, during the rush of a few years ago, when none of the furnaces were as careful as they should have been in their grading, the Northern iron was deficient in silicon and higher silicons than usual were shipped from the South. At that time we visited one foundry which was using all Northern pig, and found the arms of fly wheels cracking after they were cast by reason of the low silicon in the mix, and a few squares away another foundryman, using nothing but Southern iron, was troubled by the brittleness of his castings, as his mixture was running over 4 per cent. in silicon. The trouble at these foundries was completely rectified by the one hauling some of its low silicon to the other and bringing back in exchange some of the high silicon. In fact, if each of the foundries had been using a mixture of Northern and Southern irons they would not have known that the analysis of each was so completely different from what they had ordinarily received.

Of course in localities such as this, where so much iron is produced from lake ores, the demand is principally for the soft grade of Southern iron to take the shrinkage out of the mixture and thus really strengthen the castings into which the iron is poured; but in addition foundries are getting splendid results by the use of the lower grades of Southern iron in place of scrap and to reduce the excess of graphite in heavy casting work. In addition to this, the higher phosphorus Southern irons are particularly applicable for castings of very light sections, such as stove plates, &c., as the higher phosphorus and silicon make the iron fluid and the castings very sharp and clean. Splendid results are also obtained with the 1 to 1.75 manganese Southern iron, which reduces the sulphur and cleans the iron.

There is a growing demand for Southern iron, as the foundries are learning the advantages to be obtained from the use of higher phosphorus in their mixture, and they must now almost rely on the South for this, as the local Northern ore beds which formerly supplied the phosphorus for the Scotch irons are being pretty well worked out, and owing to the use of lower phosphorus irons in puddling and the large amount of steel which is being rolled the tap mill cinder and roll scale are not as high in phosphorus as formerly, and therefore cannot be used as successfully to bring up the phosphorus contents of the pig iron in the Northern blast furnaces.

In steel, as you are aware, every effort has been made for years to reduce the phosphorus contents, but in this the practice is also changing, and pig iron high in phosphorus is now added to the steel to purify it from dross and to keep sheets from sticking together when passed through the rolls. In addition to this it is found that the plates are more easily cleaned and pickled for galvanizing, and in fact the steel is stronger with a limited amount of phosphorus added. The change in feeling in regard to phosphorus is very striking; for instance, when we started in the iron business as chemist every article we read told of the trouble experienced with phosphorus, and we were greatly surprised after getting up a process for eliminating in the cupola about one-quarter of our phosphorus to find the iron not as suitable for the work as it was before.

* Paper read before the Pittsburgh Foundrymen's Association, Pittsburgh, November 7, 1904.

## Trade Publications.

**Lathes.**—Three circulars bound in green paper cover are being distributed by the Draper Machine Tool Company, Worcester, Mass. These contain illustrations and descriptions of 18, 24 and 28 inch lathes, respectively, all having quick change feed gearing. A 16-inch lathe is made in the same pattern as the 18-inch lathe; a 20-inch the same pattern as the 24, and 22 and 24 inch extra heavy, and 31-inch in the same pattern as the 28-inch lathe. Specifications on the back of each circular give the principal data for the various sizes.

**Power Equipment.**—"The Book of the Four Powers" is the title of a handsome publication from the Allis-Chalmers Company, Chicago. The four powers alluded to are steam, gas, water and electricity. The introduction outlines briefly the scope of the work undertaken by this concern. Thereafter follow descriptions of a few notable installations of machinery of the four classes. The frontispiece is a large half-tone engraving of the big Allis-Chalmers engine and Bullock generator which are in use at the St. Louis Exposition for the supplying of light and power. In the description concerning this unit the principal dimensions are given and other interesting facts concerning its operation. Another full page engraving shows one of the 13 pumping engines which furnish the city of St. Louis and the Exposition with their entire water supply. Other installations shown are views in plants in all parts of the world, including New South Wales, Australia; Dublin, Ireland; London, England; Havana, Cuba; Shawinigan, Canada; South Africa, Alaska, and all parts of the United States. Among the latter a view in the Manhattan power station in New York City is particularly interesting. It contains 11 engines, aggregating 61,000 horse-power at the minimum rating. The Interborough Rapid Transit Company's power house, which operates the elevated and subway systems in New York, has 17 engines, aggregating more than 200,000 horse-power. Among the remarkable water power developments illustrated and referred to are those at Niagara Falls, where 11 Escher-Wyss turbines of 5500 horse-power each are installed, and the Canadian Shawinigan Falls. These two places alone use turbines with an aggregate capacity of 170,000 horse-power. Several other typical installations are referred to. Gas engines made by this company are of the Nurnberg four-cycle double acting type and are built in sizes ranging from 260 horse-power upward. The electrical machinery is all made by the Bullock division of this company in Cincinnati. Numerous forms of motor and dynamo equipment are illustrated. The largest direct current generator ever built was one made for the Cincinnati Gas & Electric Company. The remainder of the book deals with mining and mill machinery, which was the principal line of the Frazer-Chalmers Company prior to its alliance with the E. P. Allis Company in the formation of the present concern.

**Bolt and Nut Machinery.**—The Pawtucket Mfg. Company, Pawtucket, R. I., has recently issued descriptive illustrated catalogue No. 2, showing a full line of bolt and cold punched nut machines. These include upright, lever, cutting and slitting shears; revolving forge furnaces; bolt forging machines; upsetting machines; bolt pointers; pointers and trimmers; two, four and six spindle open die bolt threaders; multiple spindle solid die semi-automatic bolt threaders and nut tappers; cold punch nut presses; automatic and chamfering presses; automatic trimming attachments; punch and die grinders; six-spindle automatic nut drilling or reaming machines; multiple spindle nut tappers; nutting tables; screw shaving machines; manufacturing lathes; nut and bolt head milling machines; elastic rotary blow riveting machines, &c.

**Forgings.**—A neat little cloth bound catalogue, 6 x 9 inches in size, containing 74 pages, has been published by the Solid Steel Tool & Forge Company, Farmers' Bank Building, Pittsburgh, Pa. This company is a combination of the James H. Baker Mfg. Company and the Solid Steel Tool Company, Chicago, and operates an extensively equipped plant for the manufacture of railroad track tools, car forgings, drop forgings, hooks and railroad and special forgings of all kinds. The lines shown do not call for much in the way of descriptive text, hence the book is mostly made up of engravings. It is divided roughly into two parts, the first illustrating track department supplies, such as track chisels; tamping and clay picks; claw, pinch, lining and tamping bars; mauls; rail and tie tongs; punches; wrenches, rail benders; sledges; hammers; levels and gauges; hand chisels, and jacks. These are followed by boiler makers' tools, including sledges, blacksmiths' hammers, fullers, swedges, &c. The second section of the book is devoted to car forgings and drop forgings, but only illustrates a few of the large lines of forgings which are manufactured. Each section has an index. All articles are numbered so that they may be ordered by number. The company has taken an exceedingly attractive way of presenting its goods to the public, and its catalogue should be in the hands of all concerned with the purchase of forgings.

**Grinding Machines.**—Plain and cylindrical grinding machines for straight and taper work are described in a catalogue from the Norton Grinding Company, Worcester, Mass. The fore part of the book is given to the detailed description of the more important parts, such as the fixed wheel base, moving work table, speed changing devices, head and foot stocks, automatic cross feed, mechanism for supplying cooling water, oiling provisions, tools, wheels, &c. The points of advantage claimed for the machines are summarized and the three general methods of driving the machines outlined, these being overhead drive, electrical drive and self contained belt drive. Statements are also made of special work and the classes of work which can be ground to advantage. Norton plain grinders are furnished for belt drive in 11 sizes, ranging from 10 x 50 to 18 x 168 inches. The six smaller sizes are furnished also for outside motor drive and the five larger sizes for self contained motor drive or self contained belt drive. Specifications are given with each illustration to point out the differences in the different sizes. Where the greatest differences occur separate illustrations are given. The latter part of the book contains a few engravings of special pieces of work which can profitably be finished by grinding after being roughly turned to size. The data given with each example as to material, dimensions and time required in making are of more than passing interest.

**Machine Tools.**—The Marshall & Huschart Machinery Company, 62 South Canal street, Chicago, Ill., has recently issued several new pages for insertion in the large loose leaf catalogue which it made its standard several months ago. Each leaf contains a half-tone and general description, with table of dimensions. These show 9 and 11 inch Star engine lathes; Bridgeford 26-inch heavy pattern engine lathe, heavy triple geared engine lathe and heavy double head axle lathe; Mechanics' friction drill presses; Bickford ordinary plain radial drills; No. 1 Cincinnati universal milling machine; plain and improved Ransom disk grinders, and Cincinnati portable electric drills.

**Gas Engines.**—Catalogue No. 3 from the Elyria Gas Engine Company, Elyria, Ohio, describes gas engines of from 10 horse-power up. It is attractively illustrated and gives a detailed account of the engine, its design, regulation, how to care for it, its economy and special parts, such as valves, governor, piston, crank shaft, igniting mechanism, cylinder head, cylinder, &c. Half-tone engravings, in addition to exterior views from the side, front and back, show details of the frame, valve mechanism, a general longitudinal section, the governing mechanism and cylinder.

### NOTES.

The United Telpherage Company, Westfield, N. J., recently issued circulars Nos. 49 and 51. The first is on the subject of "Electricity in Gas Works," and shows numerous illustrations of the manner in which telpherage may be applied to the hoisting, conveying, screening, depositing and storing of coal or coke and the removal of ashes, and the quenching of coke and transporting of it to cars and wagons for shipment. The second circular shows illustrations of several parts of a system erected at the Wm. Baker Chocolate Company's plant in Milton, Mass.

The International Acheson Graphite Company, Niagara Falls, N. Y., has issued bulletin No. 6 on the "Adaptability of Acheson Graphite Articles for Ease of Machining." It contains many suggestions regarding machining and assembling Acheson graphite electrodes for electrolytic and electrometallurgical processes, and also for use as stirring rods, bushings, circuit breaker contacts, molds, &c.

The Jeffrey Mfg. Company, Columbus, Ohio, in bulletin No. 9 has prepared something which will be of great value to a great many of its patrons and others. It contains instructions for the care and operation of direct current electric generators, giving diagrams to illustrate its points.

The Jeffrey Mfg. Company, Columbus, Ohio, has brought out a little pamphlet of pigeon-hole proportions, on the subject of water elevators, this being known as "Special Price-List No. 62-B." The elevators shown are of the double beam type with single or double chain bucket, arranged to be driven by horse-power. A box type elevator for irrigating and drainage purposes is also shown. Horse-power gearing mechanisms are another feature illustrated.

The Alberger Condenser Company, 95 Liberty street, New York, has prepared a little pamphlet for distribution at the World's Fair on Alberger condensing apparatus. It consists for the most part of illustrations showing a barometric condenser, steam driven and belt driven Corliss and rotative dry vacuum pumps, a Corliss circulating pump, Corliss vertical cross compound pump, a vacuum and circulating pump for a central condenser and for a barometric condenser, a counter current surface condenser for steam turbines, a two-stage dry vacuum pump for steam turbines, centrifugal circulating pumps, cooling towers, &c.

Black Brothers Machinery Company, Mendota, Ill., issues four circulars of special machines which it manufactures. Among these is the Pioneer molding sanding machine for sandpapering even or uneven surfaces of moldings, casings, &c., equal to the best hand smoothed work, at the rate of 20 to 40 feet per minute. The capacity of the machine can be doubled by feeding two moldings at the same time. The acting feature of the mach'ne consists of a number of brooms mounted to form two large circular brushes. These brushes are backed with sheets of sandpaper split into numerous strips. The soft elastic surface of the brush causes the flexible sandpaper strips to be yieldingly pressed into the irregular surfaces of the work. Another circular shows a mortising machine for cutting either blind or other mortises of any size from ¼ to 1 inch in width, ⅞ to 5 inches long and from 1 to 5 inches deep. The smallest sized holes can be cut at the rate of 60 per minute and the largest at 20 per minute. The third circular shows a chain clamp for holding glued articles together while they set. A modification is a chain column clamp for holding stave columns together, and still another a stand of clamps holding several tiers of glued blocks. The fourth circular shows a little quick-set hand screw, which was described in *The Iron Age* of September 22.

# The Iron Age

**New York, Thursday, November 17, 1904.**

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.


## The National Finances.

The preliminary calculations upon which the annual report of the Secretary of the Treasury to Congress will be based are now being made by the experts of the Department. In spite of the optimistic declarations concerning the Treasury outlook which were current before the elections, it has already been made clear that Congress will be advised that the country must be prepared to face a deficit of between $25,000,000 and $30,000,000 on July 1 next. This should serve as a warning to Congress to observe the utmost economy in providing for the national expenditures for the coming fiscal year.

The big balance on the wrong side of the ledger that has been rolled up in the first four months of the current fiscal year is due entirely to increased expenditures and not to decreased revenues. The total receipts from all sources up to the close of business on November 10 amounted in round figures to $200,000,000, compared with $201,500,000 for the same period a year ago. The expenditures of the current year, however, have already aggregated $222,234,000, as compared with $201,118,000 in 1903. Thus, while the receipts and expenditures almost exactly balanced on this date a year ago, there is now a deficiency of $22,494,000.

The receipts from customs for the current fiscal year have aggregated $94,606,471, as compared with $99,356,841, a loss of about $5,000,000, which is likely to be recouped before the end of the fiscal year. From internal revenue the collections for the current year have aggregated $85,708,656, as compared with $86,195,878 a year ago, which is a small decline, due mainly to certain changes in the revenue laws and to trade conditions which are likely to be reversed before next July. In all probability, therefore, both customs and internal revenue will produce quite as much in the current fiscal year as last year. In the item of miscellaneous receipts the revenues have aggregated $19,424,776, as compared with $14,932,887. This increase of about $4,500,000 is almost exactly the amount which the Louisiana Purchase Exposition has paid into the Treasury on account of the Government loan made in the last fiscal year. Aggregating these items, the receipts for the current year are quite up to last year's total.

In the matter of expenditures every important item, with the single exception of pensions, is larger for the first four months of the current year than for last year. The civil and miscellaneous expenses, which cover the maintenance of the executive departments, have amounted to $57,163,746, as compared with $50,659,854 a year ago. The maintenance of the army, which it was confidently predicted would show a decrease, foots up $55,976,062, as compared with $50,734,775 last year. The great cost of the new navy is reflected in the item of naval expenditures, which amount to $42,856,522, as compared with $33,350,890. Even the Indians have cost the Government more money this year than last, the total footing up $4,488,956, compared with $3,991,845, which is an incomprehensible increase in view of the steady decrease in the number of Indians and the rate at which they are assumed to become self supporting.

A ray of encouragement is found in the small decline noted in pensions, for it seems to indicate that the Government has passed the high water mark for this monumental item. For the first four months of the current year the total is $51,752,003, as compared with $52,528,297 a year ago, a decline of about three-quarters of a million dollars. What the record will be at the end of the year, however, no one can estimate, as it is impossible to calculate the increase that will result from the famous disability order issued last spring, which provides what is equivalent to a service pension for every veteran above a certain age.

Even the interest account of the Government shows an increase, the amount being $9,996,907, compared with $9,842,353. The interest account can not, of course, be reduced as long as Congress is piling up a deficit in place of a surplus.

The only uncertain factor in the calculation is the amount of money that will be spent on account of so-called continuing appropriations—namely, those for river and harbor improvements, the construction of war ships, &c.—but in view of the speed at which all this work is progressing there is every reason to anticipate a maximum outlay on account of these items. If this expectation is realized the deficit will surely pass the $30,000,000 mark by June 30 next.

Fortunately the condition of the Treasury is such that the impending deficit need not be regarded with apprehension, the cash balance in the Treasury on November 9 being $145,654,456, in addition to the gold reserve of $150,000,000. There are also funds on deposit subject to the order of disbursing officers in the various branches of the Government aggregating $56,767,892, which make a round total of available cash on hand of somewhat more than $200,000,000. Notwithstanding this comfortable balance, it is clear that Congress must soon face the alternative of making a heavy cut in current expenditures or of providing additional means of raising funds to keep the Government going. There is no reason to believe that the next fiscal year's receipts will materially exceed those of this year, while even a normal increase in expenditures would leave us with a deficit at the end of that twelvemonth of at least $40,000,000 more.

The large increase in the Republican majority in Congress as the result of the recent elections has caused a great deal of speculation as to whether the leaders will regard the outcome as a popular indorsement of the so-called "stand pat" policy and will discourage all attempts at tariff revision in the Fifty-ninth Congress which meets in December, 1905. It is, of course, too early to venture any prediction, but, in view of the condition of the national finances, revenue legislation in the not distant future may be expected, and the development of sentiment in Congress that will follow the early gathering of Senators and Representatives in Washington will be awaited with very general interest.

The statement is seriously made that commission merchants have begun to look into the cost of foreign pig iron in the expectation that the reviving demand will carry prices of domestic iron beyond the importing point. This may, of course, take place as a result of contingencies interfering with the operation of blast furnaces. But if the coke is to be had, and if the railroads do not again break down under excessive traffic, as they did two years ago, the blast furnace capacity of this coun-

try is certainly ample to take care of any probable demand for pig iron at an advance of another dollar or so. Such an advance will bring many more idle furnaces in. An addition of $2 to the present price would in all probability bring so much iron on the market that it would speedily be swamped. It is to be hoped that no such development is impending in the immediate future. What the iron trade now needs is a steady demand and not an excited market.

## Industrial Railroads and the Anti-Rebate Law.

Complaints against alleged discrimination by railroad companies in favor of so called industrial railroads have succeeded in making a case before the Interstate Commerce Commission. On Friday the commission rendered a decision that a number of railroad companies whose lines center in Chicago have been giving what amounts to an illegal rebate to the Illinois Northern and the Chicago, West Pullman & Southern railroad companies, both owned by the International Harvester Company, and to the Chicago, Lake Shore & Eastern, owned by the United States Steel Corporation. It was shown by an investigation ordered by the commission that the Illinois Northern and the Chicago, West Pullman & Southern railroads are each only a few miles in length, merely connecting the yards of the International Harvester Company's plants with the tracks of regular railroad companies. Formerly these two terminal roads received only switching charges of $1 to $3.50 per car, but they are now obtaining from as many railroad companies as would grant it a proportionate division of the through rate. To Missouri River points this proportion is 20 per cent. of the whole charge, amounting to $12 per car on farm machinery. A reasonable charge for switching is placed by the commission at $3 to $3.50 per car, and any excess above such charges is held to amount to unlawful preference in favor of the International Harvester Company and to be a violation of the Elkins anti-rebate law. The testimony taken shows that, while many railroad companies refused to grant the excessive division of joint rates, those which gave it received the bulk of the business of the International Harvester Company. A similar condition is stated to have been found to exist regarding the Chicago, Lake Shore & Eastern, which is a short terminal road connecting the South Chicago plant of the Illinois Steel Company, a subsidiary company of the United States Steel Corporation, with regular railroad lines running out of Chicago to the east, west and south.

Under the circumstances the commission regards the excessive division of rates as a means of circumventing the prohibition of rebates by the Elkins law, as it operates precisely as a rebate to cut the traffic charge for the benefit of the shipper, and has referred the case to the Department of Justice for proper action in the premises. Criminal prosecutions may be brought, as the law provides that both the giver and receiver of rebates can be punished.

Whether a criminal prosecution be brought or not, the publicity which has been given to these transactions is very likely to put an effectual stop to them, and for a time, at least, will discourage other manufacturers and railroad companies from entering into such relations. It will be observed that the commission does not condemn the practice of railroad companies granting a reasonable amount per car as a recompense for switching services rendered. In the case of a plant like that of the Illinois Steel Company at South Chicago, its own railroad company having locomotives and a great network of connecting tracks undoubtedly relieves a regular railroad company of much local work in taking and delivering cars. For this service an allowance is properly made. But the allowance must be reasonable and not so great as to amount to a rebate.

## Is American Enterprise in Danger of Eclipse?

European manufacturers are proving themselves to be apt students of American methods. An American machine tool manufacturer who has spent much of the past year in introducing a new machine in European shops, especially in England and Germany, states that progressive firms in the metal industry abroad are showing greater enterprise than their American competitors in introducing labor-saving American built machinery, particularly where such machinery departs from the usual practice, and that labor conditions abroad make it easier for owners of machine shops to take advantage of such tools than in similar establishments in the United States. These statements are so radically opposed to the popular belief on this side of the water and, it may be added, in the very countries of which he speaks, that they are worthy of careful consideration, especially as they come from a man who is recognized as a leader in an important branch of machine tool design and manufacture.

This gentleman gives the following incident to illustrate his statement as to labor conditions: A Berlin firm which conducts a very large machine shop sent to the American company sample pieces to be worked by the new machine tool, to ascertain what saving of time and what betterment of product the new practice would accomplish. The pieces were returned, illustrating the several stages of the work, including one piece which had been roughed out to required size in an engine lathe in seven minutes. When the American visited the Berlin shops a little while afterward he was told that the statement contained on the tag affixed to this piece of metal was simply preposterous; that the lathe work would require at least one hour. The American replied that he himself and the mechanic who accompanied him would demonstate the truth of the statement on the spot. But a foreman, a German of course, said: "No, if the Americans can do it in seven minutes we can." The matter went over for a day or two, and the foreman made his report. He had done the work in five minutes. This exhibition of alertness was significant in itself, but not nearly so significant as what came after. The German mechanics as a body were quick to learn the lesson brought from America, and within four weeks the engine lathe practice of the entire works had been changed over and the product very materially increased, much of the change being wrought by the workmen themselves on their ov ı initiative. The motive was "to do what the Americans can do." Probably most managers of American machine shops would hesitate some time before they would undertake to make such a radical reform among their machinists, unless they would court labor trouble. It may readily be seen that the influence of the constant effort abroad to meet, and beat if possible, American competition, together with the constant discussion of the subject in the press of each of the more enlightened countries, must have an effect upon workmen very different from that produced by the self satisfied tone of the American press and American opinion generally, that American practice cannot be equaled by competitors anywhere. American labor must find out

sooner or later that there is such a thing as overconfidence in its own skill, if the trend of labor abroad as observed by this one manufacturer shall become general.

This observer asserts that he found much the same condition in most progressive shops, and he visited many such in Germany and England. As he was demonstrating a machine he came in contact with the workmen themselves and bases his opinion upon what he learned from them as well as from their employers. In England this spirit would have been impossible before the great machinists' strike of several years ago, because the baneful shop committee was present in every machine shop. To-day the shop committee has pretty generally disappeared, he says, and the time has come when it is no longer true that a lathe hand must not even sharpen a tool while his lathe is on a long cut, but must wait for the machine to be idle. The workman is learning that it is to his advantage to produce the maximum of work, and he is taking as his standard the American mechanic, or, rather, the ideal American mechanic. He is aiming to equal his ideal and to surpass it if he can. All this sounds rather Utopian and doubtless many English employers would laugh at the idea. Yet if such an undercurrent exists it is bound to be an important factor in the future.

The same spirit pervades the management of Continental machine shops. The value of American tools has been learned, and when one is offered that will do better or quicker work, to better or cheapen the product, the European manager is quick to take advantage of it. The experience of this one American company is that the English and German manufacturers, and the French as well, are buying the new machine with greater eagerness than are the Americans, and it is recognized as a high class tool. The same tests that changed the lathe practice of the Berlin shops resulted in orders for a dozen expensive American tools.

Other observers may make different reports than this; yet it is certain that in Europe the spirit of appreciation, tinctured with fear, of American competition is spurring manufacturers to spend their money and get the best machines the Americans can produce. They realize that the United States has a great start on them, because the most progresisve methods of manufacture had their beginning here and have developed with amazing strides. In Sweden this truth was realized first of all. The other manufacturing countries followed along.

Possibly the criticism of American manufacturers is too severe. The successful American business man may now be slower to make radical changes in his methods of production than Europeans, but once convinced that such a change is commercially practicable and to his advantage, he is still quick to act. But he must not permit himself to lose sight of the fact that the manufacturer who does not keep abreast of the times in the mechanical equipment of his plant must fall behind, which is the inevitable outcome in this era of sharp competition and small margins of profit. And the workman who refuses to accept the best of labor saving machinery and to make the best use of it must also fall behind and be distanced by those who realize the trend of the times.

Now that the Congressional elections are over it would be quite interesting to know how many of the successful aspirants felt constrained to give assurances to labor leaders of an intention to support a national eight-hour law. It will be remembered that the American Federation of Labor announced early in the campaign that an effort would be made to compel candidates for Congress to declare unequivocally their position on this question. Judging from the strength of the Socialist vote, however, it would appear that in some of the larger cities the candidates of neither of the old parties received pronounced support from those who propose to carry labor questions into politics. Such action would seem to leave the successful contestants free to handle labor questions according to their individual judgment.

## The Problem of Diverting Immigration to Rural Regions.

Each year brings with it reports from the West that there are not enough men available for the harvest and that farmers are hard pushed to gather their crops. This is not surprising during busy seasons of husbandry in sections were the large cities are far apart and there is little surplus population to draw upon. But in the East there would seem to be no possible reason why farmers should find help scarce, excepting perhaps during times of great manufacturing activity. Such an autumn as this has been should have afforded all the farm help that was necessary anywhere within 100 miles of New York. Yet in Connecticut crops have gone to waste because there were not enough men to harvest them. The free employment bureaus maintained by the State have had many calls for farm hands, but have not been able to supply the demand, applicants for work declining such opportunities on the ground, partly, of too long hours, which is a reason that must appeal to some men, and partly that most farmers do not give their men a sufficiently good table. Both these reasons are in reality excuses for not going into the loneliness of the country, which the laborer of the city dreads more than he does privations for himself and his family. Even the immigrant who was brought up in the country feels the fascination of the city after he has been in it a while and is loath to leave it, and thus limits the usefulness that he could bring to his newly adopted country. If he gets out of the city before he acquires the city habit he is all right. Perhaps good could be done in Europe, through the consular service, in arranging for the location of intending emigrants to settle in the country. In other words, a colonization plan on a small scale to get new and productive labor into agricultural regions of the United States might develop into important beneficial results.

## The Susquehanna Iron & Steel Company.

P. E. Slaymaker and C. C. Kauffman, receivers of the Susquehanna Iron & Steel Company, Columbia, Pa., have filed their first account, covering operations from December 1, 1903, to October 15, 1904, a period of ten and one-half months. The company's plants comprise Aurora and Vesta blast furnaces, East End mill, Susquehanna mill, Union street mill, York mill, Columbia mill, all making bar or skelp iron, and a pipe mill.

During this period the volume of business, including sales between plants, amounted to $1,164,734.74. The production during the same period was 35,099 tons, divided as follows:

| | Tons. |
|---|---|
| Pipe | 8,555 |
| Bar iron | 15,237 |
| Skelp | 7,983 |
| Muck bar (sold) | 3,324 |

The average number of employees in the service of the company was 1210, and the wages paid out totaled $294,921.13.

The profits of the operations, notwithstanding all the unfavorable conditions, were $20,406.03.

During the ten and one-half months the receivers spent in construction at the pipe mill the sum of $29,154.23 for buildings, machinery and equipment. These items of construction were paid out of the proceeds of

bonds which remained unissued at the date of the receivership, and which are secured by the original mortgage and authorized by the stockholders originally, and subsequently by decree of the Court of Lancaster County. The pipe mill has been put in condition to compete with the best equipped tube mills in the country, its capacity has been practically established, and it is an open and successful bidder for business in the open markets of the country.

That these plants were operated at a profit, with an expenditure of $17,913.51 for repairs, during one of the most critical and unprofitable periods in the history of the iron industry, is very creditable to the receivers, and particularly to the general manager, C. C. Kauffman. This is especially true when due consideration is given to the very limited capital at the command of the receivers. The balance sheet submitted is as follows:

| | | |
|---|---|---|
| *Charges.* | | |
| To amount of inventory and appraisement filed December 1, 1903 | $1,090,860.33 | |
| To moneys collected from book accounts and all other sources of the Susquehanna Iron & Steel Company, over and above appraisement less sundry expenditures as per statement | 33,825.69 | |
| | | $1,124,686.02 |
| To bills payable | | 20,000.00 |
| To bonds: Receiver's certificate issued by decree of court for completion of pipe mill and other sundry replacements and betterments, secured by bonds of the Susquehanna Iron & Steel Company, $31,000 | | 30,000.00 |
| To accounts payable—Book accounts due for materials | | 137,581.72 |
| Total | | $1,312,267.74 |

| *Credits.* | Plants and equipment. | Inventory. | Total. |
|---|---|---|---|
| Aurora Furnace | $85,000.00 | $394.65 | $85,394.65 |
| Vesta Furnace | 75,000.00 | 968.50 | 75,968.50 |
| Total furnaces | $160,000.00 | | |
| East End Mill | $50,000.00 | $33,825.99 | $83,825.99 |
| Susquehanna Mill | 75,000.00 | 37,936.25 | 112,936.25 |
| Union Street Mill | 100,000.00 | 45,036.88 | 145,036.88 |
| Total bar mills | $225,000.00 | | |
| York Mill | $100,000.00 | $580.05 | $100,580.05 |
| Columbia Mill | 150,000.00 | 40,114.75 | 190,114.75 |
| Total skelp mills | $250,000.00 | | |
| Pipe mill and machine shop | $275,000.00 | $91,628.06 | $305,782.29 |
| Construction | 29,154.23 | | |
| Total pipe mill | $304,154.23 | | |
| Aggregate | $939,154.23 | $250,485.13 | |
| Bonds: Susquehanna Iron & Steel Company, appraised value | | | $15,500.00 |
| Cash | | | 21,275.54 |
| Accounts receivable | | | 106,258.87 |
| Total | | | $1,332,673.77 |

## The National Metal Trades Association

CINCINNATI OHIO, November 14, 1904.—The molders and core makers employed by the Christopher & Simpson Architectural Iron & Foundry Company of St. Louis struck on November 7 because of the determination of that firm to adopt the piece work system. All the vacancies in this shop have since been filled by the National Founders' Association.

At the business meeting of the Chicago Metal Trades Association, held at the Sherman House on the 7th inst., the chief topic of discussion was the question of membership in the National Metal Trades Association. Many of those present signified their intention of making application, which in several instances has been carried out.

The ballot now in preparation by Commissioner Eagan will be the largest sent out since his incumbency.

A number of first-class men have been added to the corps of machinists already on the pay roll of the association. These men are used as leading workmen in struck shops, as employment agents, and in many other ways for the benefit of the members of the association.

Indications are that the revision of the by-laws of the association governing the cost of initiation will result in bringing into its membership a large number of desirable employers, thereby adding greatly to its numerical and financial strength.

At a meeting of the Chicago Box Manufacturers' Association it was decided to inaugurate a labor bureau, and Paul Blatchford, secretary of the Chicago Metal Trades Association, was placed in charge thereof.

**Rogers, Brown & Co.**—CINCINNATI, Ohio, November 15, 1904.—The firm of Rogers, Brown & Co. announce that E. L. Billingslea, J. K. Pollock and W. T. Shepard have been taken into the firm. Mr. Billingslea has been the manager of their Chicago office for a number of years and Mr. Shepard has had charge of the Buffalo office for a long time. Mr. Pollock has been connected with the company and was also associated with Mr. Meacham prior to his connection with the firm. They are all of them well known to the trade and are men of wide experience. The firm now is composed of the following members: Wm. A. Rogers, Buffalo; D. B. Meacham, Cincinnati; M. Cochrane Armour, Chicago; A. A. Fowler, New York; E. L. Billingslea, Chicago; J. K. Pollock, Cincinnati; W. T. Shepard, Buffalo. Archer Brown of the original firm died last September.

Reginald P. Rowe has been elected vice-president of the National Lead Company to succeed John A Stevens, resigned. Mr. Rowe has been a director of the National Lead Company for many years.

## Statistics of the United States Steel Corporation for the Calendar Year 1903.

*From the Annual Statistical Report of the American Iron and Steel Association.*

| Iron ore shipments from Lake Superior and the total iron ore production in the calendar year 1903; also coke production in the same year. | By U. S. Steel Corporation | Total shipments and production. | Percentage of U. S. Steel Corporation, 1903. | Percentage of U. S. Steel Corporation, 1902. |
|---|---|---|---|---|
| Shipments of iron ore from the Lake Superior region in 1903.....gross tons. | 14,293,083 | 24,289,878 | 58.8 | 60.4 |
| Total production of iron ore in 1903.....gross tons. | *15,363,355 | 35,019,308 | 43.8 | 45.1 |
| Production of coke.....net tons | 8,658,391 | 25,262,360 | 34.2 | 37.4 |
| Iron and steel actually produced in the calendar year 1903.—Gross tons. | | | | |
| Bessemer, basic, low phosphorus, foundry, forge and all other kinds of pig iron | 7,123,053 | 17,816,591 | 39.9 | 44.3 |
| Spiegeleisen and ferromanganese | 156,188 | 192,661 | 81.0 | 81.0 |
| Total pig iron, including spiegeleisen and ferromanganese | 7,279,241 | 18,009,252 | 40.4 | 44.7 |
| Bessemer steel ingots and castings | 6,191,666 | 8,592,829 | 72.0 | 73.9 |
| Open hearth steel ingots and castings | 2,976,300 | 5,829,911 | 51.0 | 52.4 |
| Total Bessemer and open hearth steel ingots and castings | 9,167,960 | 14,422,740 | 63.5 | 65.7 |
| Bessemer steel rails | 1,934,315 | 2,946,756 | 65.6 | 65.4 |
| Structural shapes | 660,978 | 1,095,813 | 60.3 | 57.9 |
| Plates and sheets, including black plates for tinning | 1,557,223 | 2,599,665 | 59.9 | 59.4 |
| Wire rods | 1,100,290 | 1,503,455 | 73.1 | 71.5 |
| Bars, skelp, cut nails, open hearth and iron rails, and other finished rolled products | 1,510,085 | 5,062,008 | 29.8 | 31.1 |
| Total of all finished rolled products | 6,762,891 | 13,207,697 | 51.2 | 50.8 |
| Wire nails.....kegs of 100 pounds. | 6,801,180 | 9,631,661 | 70.6 | 64.8 |

* Includes the total production of iron ore by the Pewabic mine, but does not include the production of the Biwabik and Mahoning mines for the account of the United States Steel Corporation.

# OBITUARY.

JOSEPH JOSEPH.

After an illness of over two years Joseph Joseph, a prominent iron merchant and manufacturer of Cincinnati, Ohio, died at his home in that city, on November 9, aged 57 years. The immediate cause of his death was Bright's disease. Mr. Joseph was born in Biblis, Germany, and came to America just at the close of the Civil War, settling in Springfield, Mo. He removed in 1866 to Cincinnati, where he embarked in the wool and hide business with his two brothers. About 22 years ago he organized the present firm of Joseph Joseph & Brothers Company and the Railway Supply & Mfg. Company, with both of which concerns he was actively connected up to the time of his death. These enterprises he succeeded in building up into very large institutions, doing a business of about $15,000,000 annually. Mr. Joseph was noted for his charitable disposition and was a generous contributor to many worthy institutions, among them being the Jewish Hospital in Cincinnati, for which he recently erected a nurses' home. He was a trustee of the Mound Street Temple and a member of the Phoenix and Cincinnati clubs. All of his 10 children survive him, among them being Leonard Joseph, vice-president of the Joseph Joseph & Brothers Company, with headquarters in New York City; Eli Joseph, treasurer of the company; Maurice Joseph, secretary of the company, and Arthur and Sidney Joseph, representing the firm in Boston. The funeral took place on Friday last and interment was made at the Walnut Hills Jewish cemetery.

NOTES.

ELDRIDGE M. FOWLER, a resident of Pasadena, Cal., who had just returned from Europe, where he had been spending the summer with his wife and daughter, died at Pasadena November 7. Eldridge M. Fowler was born in Jefferson county, New York State, in 1834. He went to Detroit at the age of 18 and entered the business of Esselstyn & Fowler, dealers in lumber. For many of his early years he lived the rough life of the backwoodsman in the Michigan wilderness. From the lumber business he went to Chicago during the early sixties and engaged in the reaper business with Cyrus H. McCormick, with whom he remained for some years. In 1887 he moved his residence to Chicago and returned to the reaper business, becoming vice-president and director of the McCormick Harvesting Machine Company. After four years' residence in Chicago he returned to Detroit, where he extended his operations in the buying of timber lands and selling the timber or conducting lumber operations himself. Some of these investments were made in the region which is now known as the Mesaba range and, in retaining the mineral rights when he sold the timber, it developed that upon his property were some of the richest of the iron mines which have during the last few years opened up the Mesaba district to the world. Mr. Fowler had an interest in seven of these iron mines, some of which have lately passed to the control of the United States Steel Corporation. These mines were located about 80 miles from Duluth at the town of Eveleth. They comprise the Adams mine on 160 acres of land, three Fayal mines on 40 acres, two Spruce mines on 85 acres and the Claquet mine on 160 acres. With the growing output of ores from these mines his royalties increased from year to year.

JOEL FARIST, president of the Farist Steel Company, Bridgeport, Conn., died November 12, in the seventy-second year of his age. Mr. Farist was born in England and came to the United States when a boy. He served his apprenticeship in a rolling mill in Pittsburgh, Pa., and first engaged in business with the Rockaway Mfg. Company, which failed in the panic of 1857. He then removed to Windsor Locks, Conn., where he manufactured gun barrels and bayonet steel for the Government. Thirty years ago he founded the Farist Steel Works.

ISAAC S. PLATT, a member of the firm of Adriance, Platt & Co., one of the oldest harvesting machine manufacturing concerns in the country, died suddenly November 15, at his home in New York City, after an acute attack of indigestion, aged 71 years.

# PERSONAL.

Samuel M. Cooper, who has practically been in charge of the Wood works of the American Sheet & Tin Plate Company, at McKeesport, Pa., has been made general manager of this plant, succeeding Persifor F. Smith, formerly manager of the Wood works and Wellsville works, but who resigned on November 1.

George K. Tinker, 114 Liberty street, New York, who has been Eastern representative of the Wheeling Steel & Iron Company for the last five years, has accepted an offer from the Mark Mfg. Company of Chicago, Ill., and Zanesville, Ohio, to look after its Eastern interests in merchant pipe, boiler tubes and special electrical pipe. The Mark Mfg. Company is now an important factor in the pipe trade, having four furnaces in Zanesville, in addition to those in Chicacgo, and making the full range of sizes up to 16 inch.

Henry C. Holthoff has tendered his resignation as vice-president of the Power & Mining Machinery Company, Cudahy, Wis., and will retire from the business about December 1. Mr. Holthoff was one of the organizers and the president of the Holthoff Machinery Company, which was later absorbed by the company under its present name. F. H. Tracy, formerly of the Allis-Chalmers Company, at Chicago, has been chosen to succeed Mr. Holthoff as vice-president and sales manager.

J. W. Duntley, president of the Chicago Pneumatic Tool Company, sailed on November 8 for Europe for a quick business trip, to be gone four weeks. While there he will start the new plant at Fraserburgh, Scotland, and will visit business centers in England, Scotland and on the Continent in the interest of the rapidly growing foreign business of his company.

F. B. Manville has resigned as president and general manager of the Fitchburg Machine Company, Fitchburg, Mass., owing to ill health and the pressure of other business. Mr. Manville was formerly a member of the Manville Machine Company, Waterbury, Conn., and succeeded James A. Chapman as president of the Fitchburg Machine Company a few years ago. During the time he has been in charge of the business it has grown to be one of the largest manufacturing enterprises of the city.

The Rochester & Pittsburgh Coal & Iron Company announces that J. G. Miller has been appointed general sales agent for its Adrian Furnace, with headquarters at Du Bois, Pa., from which point he will give all communications regarding sales his personal attention. Mr. Miller is well known among Eastern foundrymen, having represented Rogers, Brown & Co. for over 12 years in their Buffalo and Philadelphia offices, and more recently in business independently under the firm name of J. G. Miller & Co.; Land Title Building, Philadelphia, Pa.

Charles Lang, formerly with the Wheeler Condenser & Engineering Company, has joined the sales department of the A. D. Granger Company at the New York office, 95 Liberty street. Mr. Lang will make a specialty of pumps and condensers, the Granger Company having recently acquired the agency of the Barr Pump Company of Philadelphia, Pa.

---

A sensational advance in the common stock of the Pittsburgh Coal Company took place in the Pittsburgh Stock Exchange on Monday, November 14, the common stock advancing under heavy buying orders from 17⅜ to 22⅛. Reports are current that control of the Pittsburgh Coal Company will shortly pass either to the Wabash or Pennsylvania railroads. However, these reports are not confirmed and are not believed to be true.

---

An order has been issued by the Amalgamated Association to furnish transportation for 140 men formerly employed in the hoop mills of the Carnegie Steel Company, at Youngstown, to go to the plant of the American Car & Foundry Company, at Madison, Ill. Only a few of the strikers are now left in Youngstown, most of them having left for other places to work.

# MANUFACTURING.

### Iron and Steel.

The Meehan Boiler & Construction Company, Lowellville, Ohio, builder of steel plate construction for blast furnaces, steel plants, &c., has under construction a complete blast furnace and other work in connection with the remodeling of the plant of the Belfont Iron Works Company, at Ironton, Ohio.

Hall Furnace of the Republic Iron & Steel Company, at Sharon, Pa., which has been idle for some months, has been started up. This furnace is 14 x 60 feet and has a daily capacity of about 200 tons. The company has four blast furnaces in the Mahoning and Shenango valleys; Atlantic, at New Castle; Hall, at Sharon; Hanna and Haselton, at Youngstown, all of which are in operation, all of the metal being used in its Bessemer plant at Youngstown. In addition the company will probably buy a large block of Bessemer iron in a short time, as it is not making enough metal to supply its Bessemer plant, which is now turning out from 1500 to 1700 tons of steel per day.

Scottdale Furnace, at Scottdale, Pa., operated by Corrigan, McKinney & Co., Cleveland, Ohio, has been blown out for repairs. The stack is to be increased in size from 67 to 80 feet. Hand filling will be continued, however, and no skip hoist will be erected. The tendency has been to continue with hand fillers at furnaces producing foundry and forge iron, and a number of stacks producing these grades have made extensive repairs this year without including the automatic skip. Operators making this decision claim that a better distribution of stock can be made by hand than by machine filling.

The Inter-State Steel Company, Rockford, Ill., is building an additional furnace at its plant, which, with the one already in operation, will give it a total capacity of 1500 tons of soft center steel per year.

The new plant of the Chicago Steel Mfg. Company, at New Castle, Ind., was destroyed by fire November 8. This plant had been burned out the December previous at Hammond, Ind., and had removed to New Castle, where a new mill for the manufacture of cut nails and agricultural disks had been completed only a few weeks before it, too, was destroyed. The fire was caused by crossing of electric wires in the pattern room. The loss amounted to $100,000, with only about $35,000 insurance. It is the purpose of the company to rebuild, and as the disk department was not totally destroyed its managers hope to be making disks by January 1. It will require a somewhat longer time to get the nail department in operation. A new engine, boilers, nail machines and some of the machinery for the disk department will be required.

The Greer tin mill, at New Castle, Pa., resumed operations on Monday, November 14.

The mills and furnaces of the Republic Iron & Steel Company at Youngstown, Ohio, have all resumed operations. The New Castle furnace went into blast on November 7, and the Sharon furnace resumes this week.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, has received an order from the Kiushiu Railway Company of Japan for 28,000 pounds 1⅛-inch outside diameter by ½-inch inside diameter, 18,000 pounds 1¼-inch outside diameter by ⅝-inch inside diameter, 1500 pounds 1⅝-inch outside diameter by ⅝-inch inside diameter, Falls Hollow round bars, 10 feet long, to be made of the same quality high grade double refined charcoal iron as previous shipments. The company is shipping large quantities of its hollow bars to other railroads of Japan and the Japanese Government, and is receiving numerous inquiries from European railroads.

The 8-inch mill in the Girard Works of the Carnegie Steel Company, at Girard, Ohio, is being dismantled and shipped to one of the works in the Pittsburgh district. It is probable very little work will be done in the future in the Girard Works, and the plant may be abandoned entirely. This is one of the works affected by the hoop mill strike, the other plants being the Warren mill and the upper and lower mills at Youngstown. The strike at these works is nearly over, the men having given up all hope of getting another conference with officials of the Carnegie Steel Company. It is not unlikely that the strike will be declared off within a very short time.

In the South Sharon Works of the Carnegie Steel Company, at South Sharon, Pa., another open hearth furnace has been started, making nine in operation out of a total of 12. No. 2 blast furnace at this plant turned out 427 tons of basic metal recently, beating its best former record of 410 tons.

The Jansen Steel & Iron Company, Oxford, N. J., started its mill this week manufacturing bar iron with 150 men and boys, and has orders on hand for two months. The works have been idle for eight months. The company will be in the market for an 800 horse-power rolling mill engine, several waste heat boilers, water heater, several pumps, shears and other rolling mill machinery.

Early this month an explosion severely damaged the gas washing plant of one of the blast furnaces of the Lackawanna Steel Company, at Buffalo, N. Y. Repairs have now been completed and the furnace has again started.

The Carnegie Steel Company has started up the 7-inch mill in the Lower Union plant at Youngstown, while the 10-inch mill has been put on double turn. Practically all departments of the Upper and Lower hoop mills at Youngstown are in full operation.

All departments of the plant of the Youngstown Iron Sheet & Tube Company, at Youngstown, Ohio, are now in full operation. This concern manufactures iron sheets made from pure puddled iron, for which it has a very large demand.

### General Machinery.

The Texas & Pacific Railway Company is planning to erect shops at Fort Worth, Texas, but no plans have been drawn and it will be some little time yet before the work will be taken up.

The Hubard Foundry & Machine Works, Lynchburg, Va., recently incorporated with a capital stock of $10,000, has succeeded to the plant and business of the Hubard Machine Works. The company will do job work principally. No new machinery is required. P. C. Hubard is president; C. W. Gooch, vice-president, and A. B. Dabney, secretary.

The Garry Iron & Steel Company, Cleveland, Ohio, is receiving an unusually large number of orders for this season of the year in the roofing, paint and pipe departments. The demand for its genuine charcoal iron roll roofing, conductor pipe and eave trough is increasing daily, and the sales of its various brands of tin and terne plates are exceptionally heavy. The company has recently closed a large contract for furnishing and applying its Trinidad pitch lake asphalt roofing for the new plant of the Lee Paper Company, Vicksburg, Mich., requiring about 1000 squares, and is now working on several good structural steel contracts, including a boiler and engine house for the Horse Shoe Forestry Company, Horse Shoe, N. Y.; a large glass plant for the Baldwin-Travis Company, at Kane, Pa.; structural steel work and roofing for the Ohio Retarder Company, at Port Clinton, and a number of steel buildings for the Scranton Coal Company, Scranton, Pa. Recent orders include a 3000-pound revolving pneumatic crane, mounted on car, and six 1-ton buckets for the Kansas City Southern Railway; 5000-pound revolving electric locomotive crane for the Great Northern Railway; 15-ton hand power pillar crane for the Chicago, Rock Island & Pacific Railway, and one 6-ton hand power overhead traveling crane for the Alamo Mfg. Company, Hillsdale, Mich.

The business of John T. Robinson & Co., manufacturers of paper box and card cutting machinery, Hyde Park, Mass., has been incorporated under Massachusetts laws, with capital stock of $65,000. The incorporators are John T. Robinson, Jr., J. Albert Robinson and Charles Warren, all of Hyde Park. No enlargement of the plant is planned.

The American Roller Bearing Company, South Framingham, Mass., has reorganized under Massachusetts laws, with authorized capital of $325,000, of which $225,000 is preferred stock. The new corporation means no change in management of the business, which is the manufacture of the American roller bearing. The company's bond issue is retired and new working capital is provided. The incorporators are Reginald H. Johnson, Braintree, Mass.; Francis H. Merrill, Jr., Melrose, Mass.; John F. Ryan, Belmont, Mass., and G. D. Strachan, Brookline, Mass.

The new building of the Whitlock Coil Pipe Company, Hartford, Conn., will be used partly for machine shop and tool room and partly for additional room for present departments of the business. The building will be 50 x 200 feet and two stories, affording 20,000 square feet of floor space.

By January 1 next it is expected that the new plant of the J. George Leyner Engineering Works Company, now under process of construction at Littleton, Col., a suburb of Denver, will be completed and ready for occupancy. Four buildings are now under roof and the structural steel work of the fifth is practically completed. The buildings comprise a forging house, 61 x 160 feet; machine shop, 101 x 208 feet; pattern shop, 40 x 102 feet; power house, 45 x 65 feet, and an office, 41 x 41 feet. The cost of the entire plant, including the 25 acres of land upon which it is located, and the new machinery, will be approximately $300,000. When to this is added the equipment from the present plant of the company at Thirty-sixth and Wazee streets, Denver, the total valuation of the plant will reach about $650,000. Employment will be given to about 200 men. The plant is connected by a spur with the Denver & Rio Grande Railroad and will also be served by an industrial railway track system connecting all the buildings. In the forging room will be installed a 5-ton traveling crane, while the machine shop will be served by five cranes, four of which will run under the galleries and one through the center of the building. The power house will be equipped with a steam turbine, direct connected with an electric generator and power will be furnished by a 200 horse-power high pressure boiler. The Leyner company makes drills, compressors, hoisting engines, mine cages, and in fact a long line of mining machinery equipment.

The Northern Engineering Works, crane builders, Detroit, Mich., reports recent shipments of cranes as follows: Bethlehem Foundry & Machine Company, South Bethlehem, Pa., 4-ton electric crane, 43 feet span; Public Service Corporation of New Jersey, 10-ton, 39 feet span; New York Butchers' Dressed Meat Company, 12-ton, 39 feet span; Union Metallic Cartridge Com-

pany, Bridgeport, Conn., 12-ton, 30 feet span; People's Power Company, Rock Island, Ill., 10-ton, 50 feet span; Duluth Street Railway Company, Duluth, Minn., 20-ton electric crane, special. The company reports a much better outlook for business and is putting on the market several electric trolley hoists.

The property of the Southern Foundry & Machine Company, Knoxville, Tenn., has been sold by the receiver to W. S. Bradley, one of the stockholders, for $16,600.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, was recently awarded contract to construct two large coal handling machines for the Boston Coal Dock & Wharf Company, Duluth, Minn. This is one of the docks under the management of the St. Paul & Western Coal Company, of which M. J. Patton is superintendent. The machines will consist of two conveyor bridges, each about 350 feet long, including front and rear cantilevers, and will be designed so that coal may be screened and loaded into box cars as well as unloaded from vessels. They will be built to be operated by steam, and will be equipped with 2-ton Hulett patent excavating buckets and machinery designed to give maximum speeds of operation. The structural work will be of steel throughout, and the machines will be self propelling along the dock.

The Van Buren, Heck & Marvin Company, Findlay, Ohio, manufacturer of Buckeye traction ditching machine, is shipping a number of its machines to foreign countries. Recently two orders were received from parties at Melbourne, Australia: one from France, one from Egypt, and an order for several machines from Scotland. Inquiries are being received from many other foreign countries, and the business is increasing rapidly.

The Ross Machine Mfg. Company, Jamestown, N. Y., has been incorporated with a capital stock of $10,000. Incorporators: J. B. Ross, C. H. Walter and W. M. Haffer, Jamestown.

### Power Plant Equipment.

The Ball Engine Company, Erie, Pa., builder of automatic cut off engines, has received an order for a 1000 horse-power horizontal cross compound Corliss engine for the Altoona shops of the Pennsylvania Railroad. The engine is to be used for power in the new foundry at Altoona, and the cylinders are 21 x 34 x 27 inches. It is to be direct connected to a 500-kw. electric alternator, furnished by the General Electric Company, which runs in multiple with other alternators direct connected to Erie engines now installed in this foundry. The engine will be equipped with electrical synchronizing device. The peculiar feature of importance of this engine is the valve gear, which is of the Ball Engine Company new nonreleasing and Corliss type, which enables the engine to run at a higher speed, with the same motion and steam distribution as the ordinary low speed Corliss engine, although dispensing with dash pots and trip motion. The company has already installed in the Pennsylvania department of the National Tube Company, at Pittsburgh, a horizontal cross compound engine of this type, and also a vertical cross compound engine in the Oliver Building power plant, in Pittsburgh. This concern is building at the present time two horizontal cross compound engines of 1000 horse-power for the People's Ice, Light & Storage Company, McKeesport, Pa.

The Southwest Missouri Light Company, Joplin, Mo., purposes the installation of turbine water wheels of 1000 horse-power, a 250 horse-power boiler and a 500 horse-power generator. George Moore is president; David D. Hoag, vice-president and secretary, and A. M. Barron, treasurer and general manager of the company.

The receivers of the Wm. Allen & Sons Company, Worcester, Mass., have filed their report, which indicates that the creditors will receive about 25 per cent. of their claims, which aggregate about $35,000.

The Providence & Danielsonville Street Railway Company is to erect a new power station at North Sterling, Conn.

Among recent sales by the Northern Electrical Mfg. Company, Madison, Wis., of Northern dynamos and motors in brewing work are extensive equipments supplied to the Kranz Brewing Company, Findlay, Ohio; Indiana Brewing Company, Indiana, Pa., and the Olympia Brewing Company, Olympia, Wash. Northern dynamos and motors are in extensive use in brewing and malting work because of their great simplicity, economy of operation and ability to give constant satisfactory service under trying conditions. They are built in a wide range of types to suit them to different requirements of modern industrial work.

The Westinghouse Electric & Mfg. Company, Pittsburgh, is manufacturing an 8000 horse-power alternating current generator, by which electrical power will be made for Montreal, Canada, at falls 84 miles distant. The machine is being made for the Shawinigen Water & Power Company and will be installed in the falls of the Shawinigen River. The power to be generated will be transmitted to Montreal for use in manufacturing plants in that city. The generator weighs 276,000 pounds. The three 10,000 horse-power generators being made for the Ontario Power Company are of the same design. They will be connected with a turbine on the Canadian side of Niagara Falls and will be used to generate power for use in various parts of the province.

The James Leffel Company, Springfield, Ohio, manufacturer of turbine wheels, will erect a new boiler shop 50 x 250 feet. As soon as this is completed the present boiler shop will be used as an erecting shop. The company is just preparing to ship a 2000 horse-power water wheel to Osaka, Japan. The wheel is to replace one of similar size shipped last June, the ship carrying it having been sunk by a Russian cruiser.

### Fires.

The machine shop and garage of John J. Schaadt, at Allentown, Pa., were destroyed by fire November 10.

The foundry of the Brown Corliss Engine Works, Corliss, Wis., was recently destroyed by fire. The loss is about $30,000.

The plant of the Pearson Boat Construction Company, Duluth, Minn., was destroyed by fire November 12. The loss is placed at $160,000.

The Emmons-Borden Foundry & Machine Shops, Trenton, N. J., were destroyed by fire November 12. The loss is about $10,000.

The Blanchard Machine Company and Pennsylvania Metal Company suffered considerable loss by a recent fire in Boston, Mass.

The abattoir of the Jersey City Stock Yards Company, Jersey City, N. J., was damaged $200,000 by fire November 15.

The plant of the Keasey Pulley Company, Toledo, Ohio, was destroyed by fire November 9, entailing a loss of between $40,000 and $50,000. The company manufactures transmission appliances of all kinds. It is stated that the plant will be rebuilt at once.

### Hardware.

The H. B. Ives Company, New Haven, Conn., manufacturer of hardware specialties, is installing an entirely new steam power plant of the most modern construction, which will include a building erected in the rear of its factory especially for this purpose. The contract for the boiler has been placed with the Bigelow Company of New Haven and for the engine with the Fitchburg Engine Company of Fitchburg, Mass. The company will also install a new electric plant to light its entire factory.

The Sessions Clock Company, Forestville, Conn., will run on a 57½-hour week during the winter, the employees to receive the full 60 hours' pay. The shops will shut down at 5.45 each afternoon excepting Saturday, when the closing hour will be 4.45 o'clock.

The White Mfg. Company, Chicago Ridge, Ill., which purchased the Chicago Ridge Stamping Works, has concluded to reopen its milk can department, which has a capacity of one carload per day. This plant is admirably equipped for making milk cans. The company is about to close contract for a warehouse 75 x 200 feet, to be used to store finished stock, with side track the full length. The improved can which will be turned out is claimed to be practically indestructible.

Philadelphia Sash Weight Works, Philadelphia, has during the year enlarged its plant and equipped it throughout with new machinery. It is now in a position to turn out double the quantity of sash weights formerly possible.

United States Washing Machine Company, Racine Junction, Wis., manufacturer of the United States steel washing machine, which was put on the market about three years ago, has been compelled to increase its factory capacity in view of the steady increase in orders for this machine. The company is now in position to take care of a much larger volume of business, and solicits inquiries from the trade.

Crescent Handle Works, Evansville, Ind., has during the past few months equipped its plant with automatic long handle lathes as well as a new patent bending machine for making the various bends, so that the company is now fully equipped to furnish handles for the hardware trade. Formerly the company made only D handles, selling them to the shovel manufacturers of the country and exporting a part of the product. The company is also making cross cut saw handles, and in the near future will make cant hooks. Two additions to the factory have been built, one of them being a warehouse for hardware handles, and the other a supplementary saw mill.

The Tuthill Spring Company, Chicago, has bought a plot of ground on West Polk street, just east of Halsted, comprising 27,000 square feet of land. This the company intends to cover with a building, the whole of which it will occupy for its own business.

The Warren Axe & Tool Company, Warren, Pa., which about a year ago added lumbermen's tools to its lines of manufacture, has recently erected a new building and increased its power and machinery to meet the steadily growing demand for its lumbermen's supplies.

The Page Woven Wire Fence Company, Monessen, Pa., manufacturer of rods, wire and fencing, has recently made some important improvements in its plant. The company is employing about 800 men, with a monthly pay roll of about $40,000, and is turning out upward of 4000 tons of material per month.

The Vento Mfg. Company has been incorporated at Buffalo, N. Y., with a capital of $25,000, to manufacture hardware specialties.

**Miscellaneous.**

Arthur T. Rutter & Co., 256 Broadway, New York, have acquired the sole selling agency of the Hauesemann Metal Mfg. Company, Hoboken, N. J., for the sale of its etched name plates, steam and vacuum gauge dials, watch and clock dials and etched metal signs for any purpose, up to 17 x 17 inches. These goods are finely finished and are meeting with a ready sale.

The Light Inspection Car Company, Hagerstown, Ind., has received orders for a large number of its velocipede cars for the Japanese Government. Two of these have been in use by the Japanese during the war and have been found of considerable advantage. This company was the first to make four-wheeled cars operated by the rider with a pedal movement similar to bicycles. Railroads in almost all countries are using this car for inspection purposes.

The Waterbury Crucible Company, Waterbury, Conn., has been incorporated under Connecticut laws with capital stock of $50,000, the incorporators being L. S. Tenney, C. A. Kiernan and E. B. Seidel.

The Nye Fixture Company, Warsaw, Ind., has been incorporated with $10,000 capital stock by Chas. F. Nye, Geo. R. Smith and David H. Lessing.

The Ft. Wayne King Water Heater Company, Ft. Wayne, Ind., has been incorporated with $30,000 capital stock by E. G. Davis, Monroe Fitch and Geo. E. Becker.

The stockholders of the Flatrock Canning Company, Flatrock, Ind., have decided to rebuild the plant recently burned. It was insured for $35,000.

The Hearst Metal Wheel Company, Alexandria, Ind., has sent to the St. Louis Exposition the first metal wheel made in its new factory. It is a wagon wheel made of sheet steel.

The Keelyn Electric Company has been organized in Milwaukee with a capital stock of $15,000 by Peter Keelyn, Benjamin Burdick and Henry S. Schwenderer. Mr. Keelyn was formerly the senior member of the firm of Keelyn & Smith, electricians.

The recent fire at the yards of the Neafie & Levy Ship & Engine Building Company, Philadelphia, Pa., simply destroyed a portion of the pattern shop and a number of patterns. No new machinery is required.

The American Automatic Oiler Company, Newark, N. J., recently incorporated with a capital stock of $100,000, will not manufacture for the present, but will have the automatic oilers made by contract. Address communications to Fred'k A. Foster, Newark.

The Buffalo Brass Stamping Company has been incorporated at Buffalo, N. Y., with $50,000 capital stock. Directors, George A. Hall, Thomas A. Sullivan and Edwin S. Webster.

The recent fire at the plant of the New Home Sewing Machine Company, Orange, Mass., destroyed only the building used for japanning and varnishing and in no way interferes with the operation of the plant or the filling of orders. The building will be rebuilt at once, but no machinery will be required.

The Donovan Iron & Supply Company, St. Louis, Mo., has been incorporated with a capital stock of $10,000 to deal in bar and sheet iron, steam supplies, etc. J. F. Donovan is president.

The plant and property at Middletown, Conn., recently owned by the Liberty Chuck Company have been sold to a company at the head of which is Frank M. Ashley, 136 Liberty street, New York. A new carpet lining made of paper and a new covering for floors to take the place of matting are to be manufactured.

The McCullough-Dalzell Crucible Company, Pittsburgh, has just completed the building of a large new dry house. The new building is admirably constructed for its purposes and is complete in every detail. It comprises a series of deep pits flanked by large furnaces. Into these pits the imported clay from Klingenburg, Germany, is exposed to the heat of the furnaces for a certain time. The drying process is an important factor in crucible making after quality of the plumbago and clay is considered. Natural gas is the fuel used, as elsewhere in the works, for heat and power. The company reports an encouraging growth of business during the year, and a bright prospect for next year.

The Pressed Steel Car Company, Pittsburgh, has received a contract for 1000 steel gondola cars of 100,000 pounds capacity for the Lake Shore & Michigan Southern Railway; 100 flat cars for the Hocking Valley Railroad, and 30 ore cars for the El Paso & South Western Railroad.

F. L. & J. C. Codman, Boston, Mass., have moved their plant to L street, South Boston. The increase in the demand for their buffing wheels, of which they make all grades, loose and sewed, compelled them to secure a larger and better equipped plant.

The Standard Steel Car Company of Pittsburgh, with works at Butler, Pa., has put its wooden car department on double turn and is engaging a large number of additional men for its steel car department. The company has entered a large number of orders for steel cars within the past month.

The Lane Mfg. Company, Montpelier, Vt., has recently installed Anderson traveling cranes, rope driven, in a number of large stone cutting sheds in Vermont, Quincy, Mass.; Westerly, R. I., and other stone sections. This crane is especially designed for use in stone sheds but is also well adapted for other purposes of the traveling crane. It operates by one rope and may be equally well driven by electric motor, steam power or gas engine. The claim is made that it is as efficient as the electric crane and costs about one-third as much.

The Broderick Carriage Company, Middletown, Conn., will erect a two-story addition, 24 x 60 feet, to its shops and will install new machinery.

The West End Thread Company, Millbury, Mass., will erect a two-story brick addition to its mill, 30 x 100 feet.

The Tuthill Spring Company, maker of vehicle springs, Chicago, has bought 27,000 square feet of ground, having a frontage of 200 feet on Polk street, with a depth of 118 feet, and a frontage of 25 feet on Mather street, with a depth of 118 feet, forming an L-shaped plot of ground. On this property the company will erect a one-story brick building, 118 x 196 feet, with an addition of 25 x 80 feet, fronting on Mather street. The engine and boiler at the company's present plant will be removed to the new factory. The only additional equipment which will be purchased will be a smoke stack and foundation, a fuel oil tank and a well for supplying water to the plant.

The Driggs Sebury Ordnance Corporation's plant at Sharon, Pa., is rapidly approaching completion. The output will be rapid fire guns, and many contracts have already been secured from the Government. John Stevenson, Jr., former superintendent and manager of the Sharon Steel Company, is the manager of the plant. It will start about January 1.

The Dorothy works of the H. C. Frick Coke Company, Greensburg, Pa., will be fired this week. Other coke plants of this concern in the Latrobe district will be started up as soon as possible.

The Canadian Westinghouse Company, Limited, Hamilton, Canada, has closed a contract with the Grand Trunk Pacific Railway for its entire air brake equipment. At the present time the Canadian Westinghouse Company, Limited, has not been advised how many cars and locomotives the road proposes to build, but will know definitely in the course of a few weeks how many sets of apparatus will be required for the initial equipment.

## The National Founders' Association.

CINCINNATI, OHIO, November 14, 1904.—The meeting of the Administrative Council of the National Founders' Association, which was to have met in annual session at the Grant Hotel, Cincinnati, at 11 o'clock, November 14, had to be postponed until 2.30 p.m., on account of the absence of the Eastern contingent, who were seriously delayed *en route* because of the storm. This council is composed of the following named gentlemen: Isaac W. Frank, president, United Engineering & Foundry Company, Pittsburgh, Pa.; W. F. Angus, Montreal Steel Works, Montreal; H. A. Carpenter, A Carpenter & Sons Foundry Company, Providence, R. I.; George H. Gibby, Gibby Foundry Company, Boston, Mass.; O. W. Greenslade, Greenslade Foundry Company, Milwaukee, Wis.; William S. Hallowell, Harrison Safety Boiler Works, Philadelphia, Pa.; J. D. Leary, Queen City Foundry Company, Cincinnati, Ohio; W. H. McFadden, Mackintosh, Hemphill & Co., Pittsburgh, Pa.; H. K. McLean, Link-Belt Machinery Company, Chicago, Ill.; James McNaughton, American Locomotive Company, Dunkirk, N. Y.; Frederic Nicholls, Canada Foundry Company, Toronto, Ontario; Antonio C. Pessano, Great Lakes Engineering Works, Detroit, Mich.; C. M. Power, St. Paul Foundry Company, St. Paul, Minn.; W. D. Sayle, the City Foundry Company, Cleveland, Ohio; C. R. Stephens, Moline Plow Company, Moline, Ill.; W. D. Tynes, Hardie-Tynes Mfg. Company, Birmingham, Ala.; H. Van Atta, the J. L. Mott Iron Works, New York; E. Van Winkle, E. Van Winkle Gin & Machine Works, Atlanta, Ga.; W. H. Pfahler (honorary), Abram Cox Stove Company, Philadelphia, Pa.

The Administrative Council will end its sessions on Tuesday evening, and on Wednesday the regular business of the association will be taken up. On Wednesday the annual dinner will be served, which, judging from the *menu* card, will be a very elaborate affair. On Thursday the programme will be as follows: Uniform Agreement, report of Standing Committee thereon; Outline of Policy, discussion of, shall it be approved or disapproved; New York Agreement, shall it be modified or abrogated; Agreements, Local or National, and such other topics as shall present themselves for consideration.

# The Iron and Metal Trades

There is a buoyant feeling all along the line, which expresses itself in an eagerness to buy for deliveries well into next spring whenever possible. Recent actual threatened advances in prices have stimulated contracting for raw or semifinished materials to a very considerable degree. That actual consumption has expanded correspondingly may very well be doubted, since there is little evidence to that effect. Besides the country has been very bare of stocks in the hands of distributers and of manufacturers, and it takes a very large tonnage to bring it back to the normal.

The excited purchasing of Pig Iron has been allayed somewhat, to the satisfaction of the more conservative makers, who were getting frightened at the chances of a runaway market. A good deal is being said of the probability of a shortage of Ore, and it may develop. But it must not be forgotten that we entered this season with a very large accumulation, and that the East can fall back on foreign supplies. There is a good deal of reserve capacity, too, in Virginia, and some in Alabama and Tennessee.

The Billet manufacturers have advanced prices $1.50 per ton, or from $19.50 to $21, Pittsburgh, which means that outside mills buying raw material in the open market must look to better prices for finished material, and this they have done to some extent. Still the tonnage which comes within this class is not particularly large.

Prices for Finished Iron and Steel have actually risen, or are advancing, in some respects owing to the general fear of such an advance. The Bar makers and the Beam and Plate mills will hold meetings to-morrow. So far as the former are concerned an advance would merely ratify actual events. Boiler Tubes have been advanced $4 per ton.

The bridge builders are not yet feeling any marked improvement. In fact, the tonnage coming up, notably from the railroads, is rather light. Some moderate sized orders have been taken, and some fair work is being negotiated for, including about 6000 tons for track elevating in Chicago.

The leading interests continue to keep their hands in the foreign markets, but the selling of Sheet Bars at 75 shillings, delivered, and of Plates at the figures at which they were marketed at Johannesburg lately makes a diversion of tonnage to the home markets probable.

An advance of 15c. per box was made by the American Sheet & Tin Plate Company to-day, making the price, at mill, $3.45 per box.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type. Declines in Italics.**

At date, one week, one month and one year previous.

| | Nov.16, 1904. | Nov.9, 1904. | Oct.19, 1904. | Nov.18, 1903. |
|---|---|---|---|---|
| **PIG IRON:** | | | | |
| Foundry Pig No. 2, Standard, Philadelphia | **$16.25** | $15.50 | $14.50 | $15.00 |
| Foundry Pig No. 2, Southern, Cincinnati | **15.25** | 15.00 | 13.00 | 11.75 |
| Foundry Pig No. 2, Local, Chicago | **16.00** | 15.50 | 13.50 | 14.50 |
| Bessemer Pig, Pittsburgh | **15.35** | 14.85 | 13.10 | 15.10 |
| Gray Forge, Pittsburgh | **14.35** | 13.85 | 12.25 | 13.00 |
| Lake Superior Charcoal, Chicago | **16.50** | 16.85 | 15.25 | 17.00 |
| **BILLETS, RAILS, &c.:** | | | | |
| Steel Billets, Pittsburgh | **21.00** | 19.50 | 19.50 | 23.00 |
| Steel Billets, Philadelphia | **23.50** | 22.00 | 22.00 | 24.25 |
| Steel Billets, Chicago | **24.00** | 22.50 | 22.50 | 24.00 |
| Wire Rods, Pittsburgh | **27.00** | 27.00 | 26.00 | 31.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL:** | | | | |
| O Steel Rails, Chicago | **14.50** | 14.00 | 11.00 | 11.00 |
| O. Steel Rails, Philadelphia | **14.75** | 14.25 | 13.00 | 12.00 |
| O. Iron Rails, Chicago | **19.50** | 19.50 | 16.50 | 17.00 |
| O. Iron Rails, Philadelphia | **17.50** | 17.00 | 16.50 | 16.00 |
| O. Car Wheels, Chicago | **14.50** | 13.50 | 12.00 | 15.00 |
| O. Car Wheels, Philadelphia | **14.00** | 13.75 | 12.50 | 15.00 |
| Heavy Steel Scrap, Pittsburgh | **14.50** | 14.50 | 12.50 | 12.50 |
| Heavy Steel Scrap, Chicago | **13.00** | 11.75 | 11.00 | 11.00 |
| **FINISHED IRON AND STEEL:** | | | | |
| Refined Iron Bars, Philadelphia | **1.50** | 1.43½ | 1.43½ | 1.40 |
| Common Iron Bars, Chicago | **1.45** | 1.45 | 1.35 | 1.40 |
| Common Iron Bars, Pittsburgh | **1.44½** | 1.39½ | 1.30 | 1.34¾ |
| Steel Bars, Tidewater | **1.50** | 1.44½ | 1.44½ | 1.44½ |
| Steel Bars, Pittsburgh | **1.35** | 1.30 | 1.30 | 1.30 |
| Tank Plates, Tidewater | 1.54½ | 1.54½ | 1.54½ | 1.78 |
| Tank Plates, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.68 |
| Beams, Tidewater | 1.54½ | 1.54½ | 1.54½ | 1.73½ |
| Beams, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Angles, Tidewater | 1.54½ | 1.54½ | 1.54½ | 1.73½ |
| Angles, Pittsburgh | 1.40 | 1.40 | 1.40 | 1.60 |
| Skelp, Grooved Steel, Pittsburgh | **1.40** | 1.40 | 1.30 | 1.35 |
| Skelp, Sheared Steel, Pittsburgh | **1.50** | 1.45 | 1.30 | 1.40 |
| Sheets, No. 27, Pittsburgh | 2.00 | 2.00 | 2.00 | 2.35 |
| Barb Wire, f.o.b. Pittsburgh | 2.05 | 2.05 | 2.00 | 2.55 |
| Wire Nails, f.o.b. Pittsburgh | 1.60 | 1.60 | 1.60 | 2.00 |
| Cut Nails, f.o.b. Pittsburgh | 1.60 | 1.60 | 1.60 | 1.90 |
| **METALS:** | | | | |
| Copper, New York | **14.50** | 13.87½ | 13.12½ | 13.00 |
| Spelter, St. Louis | **5.35** | 5.20 | 5.15 | 5.00 |
| Lead, New York | **4.60** | 4.45 | 4.20 | 4.10 |
| Lead, St. Louis | **4.40** | 4.22½ | 4.20 | 4.20 |
| Tin, New York | **29.00** | 29.00 | 28.82½ | 25.10 |
| Antimony, Hallett, New York | **8.00** | 7.25 | 7.00 | 6.25 |
| Nickel, New York | 40.00 | 40.00 | 40.00 | 40.00 |
| Tin Plate, Domestic, Bessemer, 100 pounds, New York | **3.64** | 3.49 | 3.49 | 3.79 |

## Chicago.

FISHER BUILDING, November 15, 1904.

At the time of telegraphing this report, Tuesday night, Chicago has not yet been notified of the action of the New York meetings, as wires are pretty generally down across the mountains, owing to Sunday's storm. The prices that are quoted, therefore, in Billets, Bars, and possibly Plates and Structural Sections, may be inaccurate. Pig Iron continues to advance, local Northern producers raising their minimum either for the balance of this year or for the first quarter of 1905 to $16 at the furnace, as against $15.50 last week. Southern furnaces, too, that last week sold quite freely at $12.75, Birmingham, for No. 2, have, with occasional exceptions, no Iron to offer at less than $13, and are asking and in some cases getting as high as $13.50 for delivery into January and February of next year. Lap Welded Steel Boiler Tubes have been advanced $4 a ton by the leading producers, giving them the benefit of the $2 advance made on Pipe. Charcoal Iron Tubes, owing to competition on the part of independents, have not been advanced. Business on Bars, Plates, Structural Shapes and even Sheets has been greatly stimulated by prophecies of advances, and already one large producer has withdrawn from the market on Bars and allied products. Old Materials have witnessed further sharp advances, and the end is not yet. Copper, Spelter and Sheet Zinc have also advanced under the stimulus of increased demand. The Coke situation is troubling consumers somewhat, and not a few large buyers are beginning to belive that there is some truth in the dire forebodings of sellers that a famine is among the possibilities, owing not only to conditions at the ovens, but particularly to the danger of a serious car shortage.

**Pig Iron.**—Evidently the Pig Iron market has settled down to sane business conditions after the feverish activity of two and three weeks ago. The tone is very firm and

prices advance steadily, the advances being at the rate of 25c. and 50c. a ton instead of $1 or $2, as was the case when the excitement began. Local Northern Iron, which was on a minimum basis of $15.50 last week, is now held at $16 minimum for delivery either the balance of this year or the first quarter of next. Southern Iron, which we quoted at a minimum of $12.75, is held by so large a majority of the producers at a $13 minimum that we advance the price to that basis, notwithstanding the fact that there are some High Phosphorus Irons offered at 25c. less. Orders are coming in in large volume, and would be larger if sellers were willing to book them, but the attitude of producers both North and South is to limit sales to what they understand to be customers' normal requirements, thus avoiding speculative buying. The rapid advances in Coke and the talk about car shortage are serving to add strength to the Pig Iron market. A very encouraging sign of the times is the fact that railroads are becoming large buyers of castings and other Iron and Steel products. Machinery trades also are demanding larger tonnages of Iron than they have consumed for over a year. The jobbing foundries are adding new men to their pay rolls under the encouragement of increased orders for castings. Implement makers are specifying liberally on contracts. Castings entering into building operations are in heavy demand. We revise last week's prices as follows, the prices quoted being those commonly asked for the balance of this year or the first quarter of next, though in the case of Southern Iron there is a great reluctance on the part of producers to sell for delivery beyond January 1:

| | |
|---|---|
| Lake Superior Charcoal | $16.50 to $17.00 |
| Northern Coke Foundry, No. 1 | 16.50 to 16.75 |
| Northern Coke Foundry, No. 2 | 16.00 to 16.25 |
| Northern Coke Foundry, No. 3 | 15.50 to 15.75 |
| Northern Scotch, No. 1 | 17.00 to 17.25 |
| Ohio Strong Softeners, No. 1 | 17.80 to 18.30 |
| Ohio Strong Softeners, No. 2 | 17.30 to 17.80 |
| Southern Silvery, 4 to 6 per cent. Silicon | 18.15 to 19.15 |
| Southern Coke, No. 1 | 17.15 to 17.40 |
| Southern Coke, No. 2 | 16.65 to 16.90 |
| Southern Coke, No. 3 | 16.15 to 16.40 |
| Southern Coke, No. 4 | 15.90 to 16.15 |
| Southern Coke, No. 1 Soft | 17.15 to 17.40 |
| Southern Coke, No. 2 Soft | 16.65 to 16.90 |
| Southern Gray Forge | 15.65 to 15.90 |
| Southern Mottled and White | 15.40 to 15.65 |
| Malleable Bessemer | 16.00 to 16.50 |
| Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon | 19.30 to 20.30 |
| Jackson County and Kentucky Silvery, 10 per cent. Silicon | .... to 21.30 |
| Alabama Basic | .... to 16.65 |
| Virginia Basic | 16.15 to 16.40 |

**Billets.**—On the assumption that Billet prices are likely to be advanced a heavy buying movement has been in force for the last week, buyers covering not only their immediate requirements, but taking care of the future as much as possible. Sellers have, as a rule, refused to name prices for delivery beyond the present calendar year, and in many cases buyers are laying in stores of Billets against higher prices in the year to come. Prices are unchanged at the time of writing, as follows: Sections 16 square inches and larger up to but not including 100 square inches, $24.50 per gross ton, Chicago; 100 square inches and larger up to but not including 400 square inches, $26.50; sections 400 square inches and larger, $30.50. Bessemer Rolling Billets sell, as a rule, $2 a ton below these prices.

**Rails and Track Supplies.**—It is very generally conceded that if the Rail pool had met in October of this year, as it ordinarily does, there would have been a reduction in the price of Rails, but the stiffening of the whole Steel market in the last few weeks has strengthened the hands of the Rail makers to a point where the price can be reaffirmed for another year without diminishing the tonnage to be bought. Light Rails continue to be sold at from $21 to $23 a gross ton, at mill, but it will require an exceptionally large and desirable order to secure the lowest price. Angle Bars rule at from 1.30c. to 1.35c.; Spikes from 1.60c. to 1.65c.; Track Bolts have advanced, now being quoted at from 2.25c. to 2.30c., with Square Nuts, and about 2.40c. with Hexagon Nuts. Store prices on Angle Bars, Track Bolts and Spikes are at from 15c. to 20c. above mill prices.

**Structural Material.**—The Illinois Steel Company secured the contract for Structural Steel work on the addition to the Fort Dearborn Building, amounting to about 800 tons. Demand for Structural Sections is greater than it has been at any time for more than a year. Jobbers have been buying heavily and putting the stuff in their yards as insurance against price advances on the one hand and mill congestion on the other. Railroads have at last begun placing orders for Steel bridges, the lack of which business for the last year has been such a serious blow to the Structural mills. Official prices are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.56½c., Chicago; Angles, 3 to 6 inches, ¼-inch and heavier, 1.56½c.; Angles, larger than 6 inches on one or both legs, 1.66½c.; Beams, larger than 15 inches, 1.66½c.; Zees, 3 inches and over, 1.56½c.; Tees, 3 inches and over, 1.61½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Structural Materials are 1.80c. to 1.90c. for Angles, Beams, Channels and Zees, base sizes, with 1.90c. to 2c. for 18, 20 and 24 inch Beams; Tees, 1.85c. to 1.95c. These prices are for either random lengths or cut to lengths.

**Plates.**—The Plate market not only maintains the new strength of the last week or two, but grows stronger with each day. Jobbers are putting into their warehouses large tonnages of Plates, availing themselves of present contracts to lay in large stocks in anticipation of a price advance. Boiler shop business is improving. Association prices are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 24 and up to 100 inches wide, carloads, Chicago, 1.56½c.; 3-16 inch, 1.66½c.; Nos. 7 and 8 gauge, 1.71½c.; No. 9, 1.81½c.; Flange quality, any width up to 100 inches, 1.66½c.; Sketch Plates, in Tank quality, 1.66½c.; in Flange quality, 1.76½c. Store prices on Plates are as follows: Tank Plates, up to 100 inches wide, ¼-inch and heavier, 1.80c. to 1.90c.; 3-16 inch up to 72 inches wide, 1.90c. to 2c.; No. 8 up to 60 inches wide and No. 10 up to 48 inches wide, 1.90c. to 2c.; lower gauges are quoted under the headings of Sheets. Beyond the base widths named extras from 10c. to 25c. per 100 lbs. are charged for wider widths; Flange quality is usually charged at 25c. extra.

**Sheets.**—Prices are unchanged, in spite of the advancing cost of raw materials, but mills decline to make contracts extending far into the future at present prices. There is no doubt that efforts are being made to secure the adoption of a schedule that will give the Sheet mills at least a legitimate manufacturing profit. Ruling prices, Chicago, in car lots, are about as follows on Blue Annealed and Box Annealed Sheets: Nos. 9 and 10, 1.66½c.; Nos. 11 and 12, 1.71½c.; Nos. 13 and 14, 1.76½c.; Nos. 15 and 16, 1.86½c.; Nos. 18 and 20, 2.01½c.; Nos. 22 and 24, 2.06½c.; Nos. 25 and 26, 2.11½c.; No. 27, 2.16½c.; No. 28, 2.26½c.; No. 29, 2.36½c.; No. 30, 2.46½. Store prices are subject to some variation at the following figures: Nos. 8 and 10, 1.90c. to 1.95c.; No. 12, 1.95c. to 2c.; No. 14, 2c. to 2.05c.; No. 16, 2.05c. to 2.10c.; Nos. 18 and 20, 2.20c. to 2.25c.; Nos. 22 and 24, 2.30c. to 2.35c.; No. 26, 2.40c. to 2.45c.; No. 27, 2.45c. to 2.50c.; No. 28, 2.50c. to 2.55c.; No. 29, 2.60c. to 2.70c. Galvanized Sheets like Black Sheets are still very low in price, but much firmer in tone. The net prices of the leading producer are equivalent to from 80 and 7½ to 80 and 10 from list, Pittsburgh, carload lots and larger, and the retail prices from Chicago warehouse in small lots range from 75, 10 and 5 to 80 per cent. discount from list.

**Bars.**—Iron Bars are very firm at 1.45c. to 1.50c., Chicago, the bulk of business being placed at the higher price, as the lower price is quoted only on exceptional specifications. The general impression that Steel Bars would be advanced at this week's meeting is leading to the booking of exceptionally large tonnages on the part of all producers of this commodity. At the time of telegraphing this review no word has come from New York relative to any price changes from the basis of 1.30c., Pittsburgh, or 1.46½c., Chicago, for Soft Steel Bars and Bands, and the crippled condition of telegraphic service from the East makes it necessary for us to repeat last week's quotations with this explanation. The strength in Bars has not been reflected in any great movement in Hoops, as it is understood that Hoops are on a basis now where an advance in Bars and Bands would not be likely to involve increase in Hoop prices. One large Eastern producer announces that he is out of the Bar market, having booked all the tonnage that his mill can turn out for some time to come and declining at present to take either contracts or orders. Store prices at Chicago warehouses are: Soft Steel Bars and Bands, 1.65c. to 1.70c., base, half extras; Soft Steel Angles, Channels and Tees, 1.75c. to 1.80c., base, half extras; Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Hoops, 2c. rates, full extras.

**Merchant Steel.**—At a recent meeting of the Shafting Association very decided steps were taken to put a stop to the price cutting which has characterized the market for the last few months, and Shafting makers now believe that they have seen the end of this demoralizing practice. Prices were reaffirmed on the basis of 52 per cent. on car lots and 47 per cent. on less than car lots, in base territory, with corresponding discounts in more distant territory, notwithstanding the expected advance in the cost of Steel Bars. Now that the election is out of the way a feeling of confidence has strengthened the tone of the whole industrial field, and specifications on contracts from manufacturers using high grade Steel products are very liberal and there is a satisfactory increase in new business. As in the case of Soft Steel Bars, a large business is being booked in Spring Steel, Tire, Sleigh Shoe and other lines based on the Bar prices, as there is a feeling that Bars will be advanced at this week's meeting. At the time of wiring this report, Tuesday night, no word has come from New York as to the action of the meeting, the crippled telegraph service evidently being responsible for the delay. We therefore repeat official prices as quoted last week, with this understanding, that they may have been raised somewhat at the New York meeting. Official prices, as far as this market has been notified at the time of writing, are un-

changed, as follows: Bessemer and Open Hearth Spring Steel to general trade, 1.85c. to 1.90c.; Smooth Finished Machinery Steel, 1.71½c. to 1.76½c.; Smooth Finished Tire, 1.66½c. to 1.71½c.; Flat Sleigh Shoe, 1.51½c. to 1.56½c.; Concave and Convex Sleigh Shoe, apparently unchanged at 1.66½c. to 1.71½c.; Cutter Shoe, apparently unchanged at 2.25c. to 2.30c.; Toe Calk Steel, 2.01½c. to 2.06½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots; Railway Spring, carload lots, 1.66c. to 1.71½c., with reductions for larger quantities.

**Merchant Pipe.**—Activity in buying still continues and business that will be booked during the month of November, 1904, will doubtless be greater than that for any previous November. Prices in car lots, f.o.b. Chicago, to consumers are made by quoting the following discounts:

| | Steel. | | Iron. | |
|---|---|---|---|---|
| | Black. | Galv. | Black. | Galv. |
| | Per cent. | Per cent. | Per cent. | Per cent. |
| ⅛ to ¼ inch | 67.35 | 51.35 | 65.35 | 49.35 |
| ⅜ and ½ inch | 71.35 | 59.35 | 69.35 | 57.35 |
| ¾ to 3 inches | 75.35 | 65.35 | 73.85 | 63.85 |
| 7 to 12 inches | 70.35 | 55.35 | 68.85 | 53.35 |
| Extra strong, plain ends, ⅛ to ⅝ inch | 60.35 | 48.35 | 58.35 | 46.35 |
| ½ to 4 inches | 67.35 | 55.35 | 65.35 | 53.35 |
| 4½ to 8 inches | 63.35 | 51.35 | 61.35 | 49.35 |
| Double extra strong, plain ends, ⅛ to 8 inches | 56.35 | 45.35 | 54.35 | 43.35 |

**Boiler Tubes.**—An advance averaging $2 a ton on Steel Boiler Tubes only has been made by reducing discounts two points. Prices on Iron Tubes and on Seamless Tubes remain the same as before. This makes the new price on less than car lots, f.o.b. Chicago, mill shipment, as follows:

| | Steel. | Iron. | Seamless Steel. |
|---|---|---|---|
| 1 to 1½ inches | 44.35 | 41.35 | 52.35 |
| 1¾ to 2¼ inches | 56.35 | 41.35 | 40.35 |
| 2½ inches | 58.35 | 46.35 | 43.35 |
| 2¾ to 3 inches | 64.35 | 53.35 | up to 4 in. 50.85 |
| 6 to 13 inches | 56.35 | 41.35 | .... |

There has not been time for the warehousemen to form new prices based on the advance of mill prices at the time this is written, but corresponding advances may have been put into effect by the time this item is read. We repeat last week's store quotations with this explanation:

| | Steel. | Iron. | Seamless Steel. |
|---|---|---|---|
| 1 to 1¼ inches | 42½ | 37½ | 40 |
| 1⅜ to 2½ inches | 52½ | 35 | 37½ |
| 2½ inches | 55 | 37½ | 40 |
| 2¾ to 5 inches | 62½ | 47½ | 47½ |
| 6 inches and larger | 52½ | .. | .. |

**Cast Iron Pipe.**—A good volume of routine business is coming in, better than ordinarily at this time of year, as the prolonged favorable weather in the West and Northwest has permitted outdoor operations longer than is usual. The rapid advances in the price of Pig Iron also have served to strengthen the tone of Cast Pipe and to stimulate buying. Prices have not yet been advanced by the Pipe makers, but are being held firmly on the basis of $26.50 for 4-inch Water Pipe and $25.50 for 6-inch and heavier Water Pipe, with $1 extra for Gas Pipe.

**Old Material.**—This market is characterized by still further advances. The Rock Island road sold about 1800 tons this week at prices that make records thus far this year. While there is far from a shortage of actual Material on hand, there is a scarcity of available Material, because dealers are continuing the policy of holding on to their Material as much as their finances will permit. The following prices represent buying cost to large consumers on car lots and greater, the maximum prices representing, as a rule, the lowest dealers' selling price per gross ton:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Steel Rails, 4 feet and over | 14.50 to 15.00 |
| Old Steel Rails, less than 4 feet | 13.00 to 14.00 |
| Heavy Relaying Rails, subject to inspection | 20.50 to 21.50 |
| Heavy Relaying Rails, for side tracks | 19.00 to 20.00 |
| Old Car Wheels | 14.50 to 15.00 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| Frogs, Switches and Guards | 13.00 to 13.25 |
| Mixed Steel | 9.50 to 10.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $16.25 to $16.75 |
| Iron Car Axles | 20.00 to 20.50 |
| Steel Car Axles | 16.00 to 16.50 |
| No. 1 Railroad Wrought | 15.75 to 16.25 |
| No 2 Railroad Wrought | 14.75 to 15.25 |
| Shafting | 13.00 to 14.00 |
| No. 1 Dealers' Forge | 10.50 to 11.00 |
| Wrought Pipes and Flues | 10.50 to 11.00 |
| Iron Axle Turnings | 9.00 to 9.50 |
| Soft Steel Axle Turnings | 9.00 to 9.50 |
| Machine Shop Turnings | 8.50 to 9.00 |
| Cast Borings | 6.50 to 7.00 |
| Mixed Borings, &c | 6.50 to 7.00 |
| No. 1 Mill | 8.00 to 8.25 |
| Country Sheet | 7.00 to 7.25 |
| No. 1 Boilers, cut to Sheets and Rings | 10.00 to 10.50 |
| No. 1 Cast Scrap | 12.25 to 13.00 |
| Stove Plate and Light Cast Scrap | 10.75 to 11.00 |
| Railroad Malleable | 11.50 to 12.00 |
| Agricultural Malleable | 10.00 to 10.50 |

**Metals.**—Business continues to improve under the impetus of increased demand, particularly from railroads, and prices show steady advances. Copper is ½c. higher, being quoted now at 14⅜c. to 14½c. for Casting Copper and 14⅝c. to 14¾c. for Lake. Pig Tin is unchanged at 30½c. to 31c. Pig Lead is still held at the official price of 4.20c. for 50-ton lots, 4.30c. for car lots and 4.50c. for small lots; but these prices may be considered almost nominal, as it is practically impossible to obtain Lead from producers at this or any other price. Spelter has advanced to about 5½c. in car lots and 5.60c. to 5.70c. in small lots. Sheet Zinc has advanced 10c., being held now at 6.35c. per lb. for car lots, Chicago, in 600-lb. casks, and ¼c. to ½c. higher for smaller lots. Old Copper, Brass and Lead continue to advance. We quote: Copper Wire and Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12½c.; Brass, 11¾c.; Red Brass Borings, 9¾c.; Yellow Brass, Heavy, 8¾c.; Yellow Brass Borings, 7⅞c.; Light Brass, 7c.; Lead Pipe, 4.25c.; Tea Lead, 4.10c.; Zinc, 4¼c.; Pewter, No. 1, 18½c.; Block Tin Pipe, 25c.

**Coke.**—Representatives of leading Coke interests here say that there is little, if any, $2.25 Coke for sale in the Connellsville region, and that $2.50 Connellsville, or $5.15, Chicago, in car lots is actually the minimum price for current business on 72-hour Foundry quality. As high as $2, at the ovens, is being asked for Furnace Coke, though, of course, there is some high Sulphur Coke offered at much lower prices either for foundry or furnace purposes. Milwaukee Solvay Foundry Coke is quoted at $5 to $5.15. Car shortage is beginning to make itself felt, and there is a feeling here that as soon as the usual heavy snowfalls make railroading difficult there may be very serious difficulty in securing a sufficient supply of Coke for the current requirements of this market.

## Philadelphia.

FORREST BUILDING, November 15, 1904.

The Iron and Steel markets have become extremely active, and the feeling in all departments is of the most hopeful character. There can be no doubt that the speculative element underlies the entire situation, but as there appears to be a good basis for it, it will make no difference if it works out right. Buying on a large scale commenced not so much because the Iron was wanted, but because the price was too low. Then came the shortage in Coke and the desire to purchase Pig Iron for forward delivery increased. This in its turn stimulated the demand for finished products, until at last an advance was developed along the entire line. The procession is now moving and it is impossible to say when or where it will halt. So far there is nothing irrational in it, although it has surprised the most careful observers, and under ordinary conditions there should be a pause some time in the near future, as buying ought to be pretty well completed, temporarily any way. Meanwhile, however, sellers of Pig Iron are disposed to close their books, first, because they have sold all the Iron they can make for three or four months to come, and, second, because if prices are going to be higher they will need the difference to offset the increased cost of production. While it looks as though prices may be higher, there is a possibility that with a slackening demand, or with an increased production, a slight reaction may occur, although for the present the feeling is all the other way. The election of Mr. Roosevelt by such an overwhelming majority has developed an immensely enthusiastic feeling, which may develop into a great trade revival, although, as we said before, there is little doubt that the inception of the movement was speculative. The most experienced men in the trade are considerably bewildered, however, and, while hopeful sentiment is universal, it is considered good policy to take a conservative position pending further developments.

**Pig Iron.**—The demand for Pig Iron is altogether beyond the offerings, so that prices are hardly quotable. Some might accept $16.25 to $16.50 for No. 2 X Foundry, but in the majority of cases books are closed, so that quotations are not given. It depends on circumstances, however, but in most cases sellers have taken care of their regular trade and under present circumstances are not particularly anxious for outside business. Mill Irons are scarce, and while $15 is about the usual figure, there is no certainty that any considerable quantity could be had at that figure; in fact, this statement would apply to all grades of iron. One of the strongest supports to the market, however, is the shortage of Cokes and Ores, but as this is probably a temporary condition, there are some hopes that the excitement will be allayed and prices become more uniform than they are at present. Nominal quotations for Philadelphia and nearby deliveries are about as follows, but they are subject to change from day to day, but last sales were at the inside to medium figures:

| | |
|---|---|
| No. 1 X Foundry | $16.50 to $17.00 |
| No. 2 X Foundry | 16.25 to 16.50 |
| No. 2 Plain | 15.75 to 16.00 |
| Standard Gray Forge | 15.00 to 15.25 |
| Ordinary Gray Forge | 14.50 to 14.75 |
| Basic | 15.00 to 15.25 |
| Low Phosphorus | 19.75 to 20.00 |

**Plates.**—The demand has broadened and mills are now taking in a great deal of business, not only for forward delivery, but quite a nice tonnage for early specification. The demand is from all sources, some for the shipyards, some for Boiler and Tank builders, but specially for car and bridge work. Prospects are extremely favorable for the spring trade, while a fair tonnage is likely to be wanted during the winter months. Prices will probably be advanced in the near future, but for the present last week's quotations are in force—viz.:

| | Carload. Cents. | Part carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel, rectangular Plates, 24 inches wide and under | 1.43½ | 1.48½ |
| Tank, Bridge and Boat Steel, over 24 inches wide | 1.53½ | 1.58½ |
| Flange or Boiler Steel | 1.63½ | 1.68½ |
| Marine, A. B. M. A. and Commercial Fire Box Steel | 1.73½ | 1.78½ |
| Still Bottom Steel | 1.83½ | 1.88½ |
| Locomotive Fire Box Steel | 2.03½ | 2.08½ |

The above are base prices for ¼-inch and heavier. The following extras apply:

| | Per 100 pounds extra |
|---|---|
| 3-16 inch thick | $0.10 |
| Nos. 7 and 8 W. G. | .15 " |
| No. 9 W. G. | .25 " |
| Plates over 100 to 110 inches | .05 " |
| Plates over 110 to 115 inches | .10 " |
| Plates over 115 to 120 inches | .15 " |
| Plates over 120 to 125 inches | .25 " |
| Plates over 125 to 130 inches | .50 " |
| Plates over 130 inches | 1.00 " |
| All sketches (excepting straight taper plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches) | .10 " |
| Complete Circles | .20 " |

All the above f.o.b. Philadelphia.

**Structural Material.**—The volume of business shows steady improvement, and it is now pretty well assured that mills will have a great deal of work put before them during the remainder of the year. Bridge work is coming out in heavy tonnages, but apart from that ship builders, car builders and architectural work is likely to be large buyers for deliveries both now and during the winter and spring months. Prices for the present remain as last quoted—viz.: Beams, Channels and Angles, 1.53½c. to 1.65c., according to specifications, and small Angles, 1.50c. to 1.55c.

**Bars.**—The demand has been very heavy; so much so that few sellers can be found at the official quotations. Consumption is increasing, but apart from that stocks are somewhat depleted and there is a general desire to stock up against contingencies. Prices are supposed to be 1.30c., base, Pittsburgh, but it would be difficult to do anything at that figure, many of the mills asking 1.40c., although some might do a little better on a first-class order. The tendency is toward higher figures, however, for both Iron and Steel, so that official quotations do not count much on markets like the present.

**Sheets.**—Business very active, prices strong and tending higher.

**Old Material.**—There is great difficulty in quoting the market for Scrap Material, as most holders ask very much higher figures than consumers think they ought to pay. Moreover, a price to-day is liable to be something else tomorrow; so that we can only give a general idea of the market, which for bids and offers is about as follows for deliveries in buyers' yards:

| | |
|---|---|
| No. 1 Steel Scrap | $15.00 to $15.50 |
| Old Steel Axles | 18.00 to 19.00 |
| Old Iron Axles | 20.00 to 21.00 |
| Old Iron Rails | 17.50 to 18.50 |
| Old Car Wheels | 14.00 to 14.50 |
| Choice Scrap, R. R. No. 1 Wrought | 17.50 to 18.50 |
| Machinery Scrap | 14.00 to 14.50 |
| Low Phosphorus Scrap | 18.00 to 19.00 |
| Wrought Iron Pipe | 12.75 to 13.00 |
| No. 1 Forge Fire Scrap | 12.50 to 13.00 |
| No. 2 Forge Fire Scrap, Ordinary | 9.75 to 10.25 |
| Wrought Turnings | 10.00 to 10.50 |
| Wrought Turnings, Choice Heavy | 11.00 to 11.50 |
| Cast Borings | 7.75 to 8.00 |
| Stove Plates | 12.00 to 12.50 |

## Cleveland.

CLEVELAND, OHIO, November 15, 1904.

**Iron Ore.**—The buying of Ore during the past week has been heavy beyond precedent at this time of the year. Furnacemen are now finding themselves confronted by a season of unusual melting of Ore without the amount on hand which they will need. Not having supplied this need earlier in the year they are now forced, at a time when the lake season of navigation is usually drawing to a close, to buy that which they did not suppose they would want when the season's carrying was at its hight. Ore producers report that through this buying movement prices have held steady. That competition which has existed from the dissolution of the Ore Association is still strong, and the better demand has done nothing more than to strengthen the prices heretofore prevailing on all grades. The buying naturally is of the non-Bessemer Ores, since the demand comes from Foundry Iron producers. The demand for Bessemer Ores is limited, since production of Bessemer and Basic Irons hardly keeps pace with the other grades. Prices on the non-Bessemers hold at about $2.60 to $2.75 for old range and $2.40 to $2.50 for Mesaba, base analysis. Indications are that the end of November will find Ore still coming down and the movement continuing as far into December as weather and vessel insurance will permit. A movement of 4,000,000 tons in November is not out of the question by any means. Rates of carriage remain as they were at 75c. from Duluth, 70c. from Marquette and 60c. from Escanaba, an advance of 5c. from midsummer rates. This advance is eaten up, as far as vessel owners are concerned, by higher costs of operation.

**Pig Iron.**—The buying fever in Pig Iron is still on, and nervous buyers are covering at what prices they can get through the first half of next year. The furnaces are not urging sales, but, on the contrary, some of them are endeavoring to winnow the orders to leave only the best and most desirable. It is apparent that Foundry for spot shipment is growing more scarce. Some of the younger furnaces have even been selling on contract dangerously close to their total output for the next few months and cannot hope to have much of a surplus available for spot delivery. The needs of the smaller buyers are being supplied by sales by the more conservative buyers. Some sales of No. 2 for spot delivery have been made at $15.50, Valley furnace. The temper of the buyers is shown in the fact that in several instances they have insisted upon buying through the first half at $15, in the Valleys, for No. 2, covering liberally at that price. One or two buyers, having covered for first quarter, are now buying for second at $15, against the advice of the furnaces. One or two furnaces have sold so much Iron that they are now holding for $15.50 for any long time contract, and then taking only the best orders offered. There is something of a stir in Bessemer Iron also, but no big buying has been started. A few furnaces are well filled on orders and are so entrenched that they are holding, with some success, for $15.50, in the Valley. The general run of quotations have ranged $14.50 to $15, in the Valleys, the latter being more common. The local Basic furnaces are off the market, quoting nominally only. The Coke trade is strong, with increased demand for both Furnace and Foundry, and the supply curtailed by a car shortage. The prices hold at $2.15 for Furnace Coke and $2.50 for 72-hour Foundry Coke.

**Finished Iron and Steel.**—The demand for everything is continuous, with the possible exception of Bars, and even in that respect local buying has been strong of late. The demand for the semifinished materials is especially good, but the producers have not been willing to sell past the first of January. During the past week buying of Billets has been strong, and in most instances sellers have been adding 50c. to $1 a ton to the association price, which consumers have paid willingly. The demand for that material may have been enhanced from the understanding that on Wednesday an advance of $1.50 a ton will be announced. On the other hand producers have safeguarded themselves by refusing to deliver after January 1 on any sales made at the current price. The best demand here is for Forging quality, which has brought $23.50, Cleveland, with many times a premium added. Buying of Structural Shapes and Plates has continued. Some more ship material has been purchased, one order covering two new Steel freighters of modern size. The bridge companies have been without exception buying on contract, and now many of them have come into the market to specify. The tonnage in this respect is most satisfactory. The one branch demanding Shapes which has shown no reviving tendency is in building, but in that respect there are some evidences of better business. In the matter of Plates there has been good buying, since many boiler and engine makers are showing new business in hand. The Bar trade has taken a spurt in the matter of Bar Iron, although some of the strength is directly attributable to the higher prices of Scrap which are being demanded by dealers. Bar Iron is now quoted 1.35c., Youngstown, as the minimum, with 1.40c. being asked. In Cleveland there is a good demand for Bar Steel, but in the immediate vicinity buyers are inclined to speculate, covering on contract material for which they have no need in sight. In fact, there is too much of that sort of buying for the current contracting movement to be a safe index of the amount of business being done. It is a constant effort of all producers to keep out the speculative buying. A few are inserting a clause in all contracts permitting the mills to cancel the contract at the expiration on such material as is left unspecified against. Cleveland proper, however, has presented some flattering orders on Bars at the old price of 1.30c., Pittsburgh, for Bessemer Steel. Standard Rails are slow, but Light Rails are readily in demand at a premium. This ranges about 50c. to $1 a ton above the market.

**Old Material.**—Scrap prices hold steady to stronger, with a fair demand, but buyers complaining about the prices. The buying has been mostly in Cast Scraps. Steels have been slow, although the marked worked up 50c. a ton on most of them.

## Cincinnati.

FIFTH AND MAIN STS., November 16, 1904.—(*By Telegraph.*)

**Pig Iron.**—The market during the past week has shown considerable strength, with a fair amount of business done. Inquiries are reported to have decreased quite perceptibly, and the volume of trading is very much less than has been apparent during the two or three weeks preceding. We are unable to locate a single inquiry or sale where the tonnage was in any considerable amount, but all agree that, taken as a whole, general conditions were fairly good. Southern Iron still seems to be in a measure handicapped by its Northern competitors, and as a result much more Northern Iron has been sold than Southern. It has also developed that practically all of this inquiry is for the next year's delivery, consumers generally being known to have enough Iron on hand to run them the balance of the year. Opinions differ very materially as to the outcome of the present activity, a few entertaining the view that the crest has been reached and that the time for reaction has about arrived, while others hold contrary views and feel satisfied that higher prices will yet obtain. It would seem, however, that if the present state of the market were to continue a corresponding showing should be visible in the demand for finished material, and that Structural Iron should in a measure at least keep pace with the raw material. Such, we are informed, is not the case, and this fact is conceded to be an important factor in the situation. The situation in the South is reported to be such as precludes all possibility of increasing the output to any great extent, owing in a great measure to the inability to secure the necessary Coke, as well as the continuance of the labor troubles, which have been on for a number of months. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $15.75 to $16.00 |
| Southern Coke, No. 2 | 15.25 to 15.50 |
| Southern Coke, No. 3 | 14.75 to 15.00 |
| Southern Coke, No. 4 | 14.25 to 14.50 |
| Southern Coke, No. 1 Soft | 15.75 to 16.00 |
| Southern Coke, No. 2 Soft | 15.25 to 15.50 |
| Southern Coke, Gray Forge | 14.00 to 14.25 |
| Southern Coke, Mottled | 13.75 to 14.00 |
| Ohio Silvery, No. 1 | 18.15 to 18.65 |
| Lake Superior Coke, No. 1 | 16.15 to 16.65 |
| Lake Superior Coke, No. 2 | 15.65 to 16.15 |
| Lake Superior Coke, No. 3 | 15.15 to 15.65 |
| *Car Wheel and Malleable Irons.* | |
| Standard Southern Car Wheel | $17.75 to $18.25 |
| Lake Superior Car Wheel and Malleable | 17.00 to 17.50 |

**Coke.**—The market is strong and large quantities are being sold to consumers of all kinds. There are rumors that cars are again becoming scarce, but as yet this has had no special effect on conditions. Prices are firm, the best grades bringing $2.50, f.o.b. ovens.

**Plates and Bars.**—Complaint is made that the finished product is not moving along in as rapid a manner as the activity in Pig Iron would seem to warrant. Dealers, however, report a fair condition of affairs, with some very substantial business being booked. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.50c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.43c., with half extras; the same in smaller lots, 1.65c., with full extras; Base Angles 1.53c., in carload lots; Beams and Channels, in carload lots, 1.53c.; Plates, ¼-inch and heavier, 1.53c., in carload lots; in small lots, 1.80c.; Sheets, 16-gauge, in carload lots, $2.05c.; smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.63c., in carload lots.

**Old Material.**—As is always the fact, just what is being done in this line is very difficult to obtain. From all information received it would appear that a better feeling is prevalent and that considerable business is being done at intervals. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $10.50 to $11.50 per net ton; No. 1 Cast Scrap, $10 to $10.50 per net ton; Iron Rails, $14 to $14.50 per gross ton; Steel Rails, rolling lengths, $10 to $11 per gross ton; Relaying Rails, $18 to $19 per gross ton; Iron Axles, $14 to $15 per net ton; Car Wheels, $10 to $10.50 per gross ton; Heavy Melting Scrap, $9.50 to $10.50 per gross ton; Low Phosphorus Scrap, $11.50 to $12 per gross ton.

---

The sales managers in the various districts of the country, employed by the Westinghouse Electric & Mfg. Company of Pittsburgh, are now in that city and have begun their annual convention at East Pittsburgh. It is the custom of this company to bring its sales managers together once a year to discuss business of the past year and make plans for the future. The sessions will last four days, and on Wednesday evening, November 16, the sales managers were tendered a banquet at the Hotel Duquesne, Pittsburgh, by Frank H. Taylor, second vice-president of the Westinghouse Company.

## Pittsburgh.

PARK BUILDING, November 16, 1904.—(*By Telegraph.*)

**Pig Iron.**—While actual sales of Pig Iron in the past week have not been as heavy as in the previous two or three weeks, yet demand is fairly active and the tone of the market is very strong. There is a very limited supply of Bessemer and Basic Iron for November and December shipment, and both Bessemer and Basic for this delivery have sold at $14.50, Valley furnace, equal to $15.35, Pittsburgh. This price seems to be the minimum of the market, while for first quarter of next year Bessemer and Basic is held firmly at $15 at Valley furnace. Prices of Foundry Iron have again sharply advanced, and Northern brands of No. 2 for this year's delivery have sold in small lots at $15, Valley furnace, and it is doubtful if it could be bought at less than this figure. Some of the furnaces that are pretty well sold up are asking $15.60 to $16 at furnace. There have been some fairly heavy sales of Northern Forge Iron in the past week at $13.25 to $13.50 at Valley furnace. The market to-day on Northern Forge is all of $13.50, Valley, or $14.35, Pittsburgh.

**Steel.**—As generally expected, the Billet Association at its meeting in New York on Tuesday advanced prices of Billets, Sheet and Tin Bars $1.50 a ton, effective at once. The mills have a good deal of tonnage of Steel on their books, and last week sales of Billets were made at $1 a ton advance over the old price. We quote Bessemer and Open Hearth Billets at $21; Forging Billets, $23; Long Sheet and Tin Bars, $23; Cut Bars, $23.50, all f.o.b. Pittsburgh, to which freight to destination should be added.

**Sheets.**—An advance of $2, and possibly $3, a ton in Black and Galvanized Sheets is expected to be made within the next few days. The Sheet mills are generally refusing to sell for delivery into next year at present prices.

**Steel Bars.**—It is probable that no advance will be made in Steel Bars, in the near future at least. The demand for Steel Bars is very much heavier than it was, but the market is hardly ready for an advance.

(*By Mail.*)

The Iron market seems to be hardening in every direction, and tonnage being entered by the mills is very much heavier than at any time in the past year. Advances in prices on Sheets, Steel Bars and Wire products are confidently expected to be made within the next week or ten days, and consumers of these products are anticipating their requirements and placing unusually heavy orders. Actual conditions in the whole Iron market are better to-day in every way than at any time in the past year, and there seems to be no doubt but that the long expected turn in the trade has come.

Inquiries for Pig Iron continue active, and while actual tonnage sold in the past wek is not as heavy as in previous weeks, the market continues very firm and furnaces are disposed to hold their Iron for still higher prices. Bessemer and Basic Iron for this and next month's shipment is very strong at $14.50, Valley, or $15.35, Pittsburgh, and actual sales have been made at this price. All kinds of fancy prices are asked for Foundry Iron, Northern brands of No. 2 being $14.50 minimum, Valley furnace, with some sellers refusing to shade $15 at furnace. There have been some heavy sales of Northern Forge Iron, one Youngstown interest having bought 5000 tons or more at $13.50, Valley furnace, this price being equal to $14.35, Pittsburgh.

While higher prices are confidently expected on nearly all kinds of Finished Iron and Steel, the only actual advance made at this writing has been one of $4 a ton in prices of Steel Boiler Tubes, made November 12, by the National Tube Company, and by the independent mills. With an advance in the price of Steel it is almost certain that Wire and Wire Nails, Steel Bars and Sheets will also be put up. It is not expected that any change in prices will be made in Plates and Structural Steel at the meetings of these associations, to be held in New York on November 17. Demand for Plates is broadening, but the market is hardly ripe for an advance.

The general tendency of the whole market is toward higher prices, and with consumers endeavoring to cover ahead as far as possible, demand for all kinds of products is heavier than at any time within the past 15 months.

**Ferromanganese.**—There is a fair amount of inquiry for Ferro, and makers are asking higher prices. We quote foreign and domestic 80 per cent. Ferro at $42 to $43, delivered, for large lots.

**Wire Rods.**—There is only a fair amount of inquiry for Wire Rods, most of the leading consumers being covered. Prices are hardening, and we quote Bessemer and Open Hearth Rods at $27 to $28, Pittsburgh.

**Skelp.**—There is a good deal of inquiry for Skelp, and considerable tonnage is being placed. The higher prices of Forge Iron and the general advancing tendency of the whole market has resulted in a further advance in prices of Skelp, which are at least $1 a ton higher than last week. We have advanced our prices, and now quote: Grooved Iron Skelp, 1.55c. to 1.60c.; Sheared Iron Skelp, 1.60c. to 1.65c.; Grooved Steel Skelp, 1.40c. to 1.45c., and Sheared, 1.50c. to 1.55c. These prices are for ordinary widths and gauges, and are f.o.b. cars, maker's mill, terms 30 days, less 2 per cent. for cash in 10 days.

**Steel Rails.**—New business being entered is for small lots only, and no large contracts are expected until the price of Steel Rails for next year has been fixed. Some time ago it was practically certain that Rails would be reduced, but with the great improvement that has come in the whole Iron market and the expected advance in Billets, it is possible that the price of Steel Rails will not be lowered, but will remain at $28 for Standard Sections. Demand for Light Rails continues very active, and $21, maker's mill, for the heavier sections seems to be the minimum price. Up to $25 is quoted for lighter sections, while some mills ask still higher figures.

**Structural Steel.**—The Wheeling & Lake Erie Railroad has placed an order for about 1000 tons of bridge work with the King Bridge Company of Cleveland. We understand that some relatively low prices are being made for Structural Steel work at one or two important sections, and it is certain that the agreement on prices for fabrication and erection is not being strictly adhered to in all cases. General inquiry for Structural work is larger, and the outlook is better than for some time. We quote: Beams and Channels, up to 15-inch, 1.40c.; over 15-inch, 1.50c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.40c.; Angles, 8 x 8 and 7 x 3½ inches, 1.50c.; Zees, 3-inch and larger, 1.40c.; Tees, 3-inch and larger, 1.45c. Under the Steel Bar Card, Angles, Channels and Tees under 3-inch are 1.40c., base, for Bessemer, and 1.45c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

**Plates.**—The Plate Association is to meet in New York on Thursday, November 17, but it is hardly likely prices will be advanced. Consumers realize, however, that Plates will not be any lower, but will probably be put up before long if present active conditions continue, and are therefore anticipating requirements and placing a more liberal tonnage than for some months. The Carnegie Steel Company, American Steel & Wire Company, Jones & Laughlin Steel Company and other concerns in this district are operating their Plate mills to practically full capacity, the first time for some months. Prices generally are firm, but on some large contracts placed lately slight concessions have been made by some of the mills. We quote: Tank Plate, ¼ inch thick, 6¼ to 24 inches wide, 1.30c., base; over 24 inches wide and up to 100 inches in width, 1.40c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

| | Per 100 pounds extra. |
|---|---|
| Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges | $0.10 |
| Gauges No. 7 and No. 8 | .15 |
| Gauge No. 9 | .25 |
| Plates over 100 to 110 inches | .05 |
| Plates over 110 to 115 inches | .10 |
| Plates over 115 to 120 inches | .15 |
| Plates over 120 to 125 inches | .25 |
| Plates over 125 to 130 inches | .50 |
| Plates over 130 inches | 1.00 |
| All sketches (excepting straight taper Plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| Marine, "A. B. M. A." and ordinary Fire Box Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Locomotive Fire Box Steel | .50 |

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast not included.

**Sheets.**—While no official announcement has been made by the American Sheet & Tin Plate Company of an advance in price of Sheets, this is expected at any time. Some of the outside mills have taken the initiative and are quoting 2.15c. to 2.20c. for No. 28. The trade believes that an early advance in price of Sheets is certain, and is anxious to contract as far ahead as possible at present prices and is placing very liberal orders. We have not yet advanced our quotations, but it should be noted that some mills are asking $1 to $2 a ton advance. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 1.95c.; No. 27, 2c.; No. 28, 2.10c., in carloads and larger lots. Galvanized Sheets are sold at 80 and 7½ per cent. off. We quote net prices of Galvanized Sheets as follows: Nos. 22 and 24, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.15c Jobbers charge the usual advance over these prices on small lots from store.

**Iron and Steel Bars.**—A meeting of the Steel Bar Association is to be held in New York this week, and it is practically certain that the price of Steel Bars will be advanced to 1.35c. and possibly to 1.40c. The trade has been advised to place contracts, and in the past week or more orders for 30,000 to 40,000 tons of Steel Bars have been taken by local mills. The Republic Iron & Steel Company has made another advance of $1 a ton on Iron Bars and now quotes these at 1.40c., Youngstown, or 1.44½c., Pittsburgh. Demand for both Steel and Iron Bars is very heavy, and the mills have more tonnage on their books than at any time in the past year. We quote Bessemer Steel Bars at 1.30c., base; Open Hearth Bars at 1.35c., base, with the usual differential for small lots.

**Railroad Spikes.**—Demand is heavier than for some time, and in sympathy with other lines of products prices of Railroad Spikes have advanced about $1 a ton. We quote at $1.60 in carloads and $1.65 in less than carloads, per 100 lbs., f.o.b. Pittsburgh.

**Hoops and Bands.**—Should an advance in price of Steel Bars be made this week, as seems likely, it is probable that Steel Bands will also be advanced, as the two products are usually sold at the same price. Tonnage in Steel Hoops is improving and prices are firmer than for some time. As noted last week one or two of the leading mills favor an advance in price of Steel Hoops and this may be made before long. We quote Steel Hoops at 1.55c. and Steel Bands at 1.30c., extras as per Steel card.

**Tin Plate.**—The market on Tin Plate is very firm, and some of the mills refuse to book contracts at the present price for delivery beyond first quarter of 1905. We understand, however, that some very large contracts for the canning interests have been placed, deliveries on which will not commence for some months yet. The trade expects an advance in prices of Tin Plate before the first of the year. We quote 100-lb. Cokes at $3.25, net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

**Merchant Pipe.**—Conditions in the Merchant Pipe trade are most satisfactory, the mills entering more tonnage than for some months, while the advanced prices are being very firmly held. The National Tube Company is now making deliveries on the Kansas Gas Line placed some time ago, and which amounts to 16,000 tons or more of 12-inch up to 16-inch Line Pipe. This contract involves 150 miles of 16-inch Pipe and a good deal of smaller sizes. An outside mill has taken a contract for 10 miles of 11⅝-inch Casing, a rather unusual size. If present active conditions in the Pipe trade continue another advance in prices may be made before long. Discounts to consumers in carloads are, as follows:

*Merchant Pipe.*

| | Steel. | | Iron. | |
|---|---|---|---|---|
| | Black. Per cent. | Galv. Per cent. | Black. Per cent. | Galv. Per cent. |
| ⅛ and ¼ inch | 69 | 53 | 67 | 51 |
| ⅜ and ½ inch | 73 | 61 | 71 | 59 |
| ¾ to 6 inches | 77 | 67 | 75½ | 65½ |
| 7 to 12 inches | 72 | 57 | 70½ | 55 |
| Extra strong, plain ends. | | | | |
| ⅛ to ⅜ inch | 62 | 50 | 60 | 48 |
| ½ to 4 inches | 69 | 57 | 67 | 55 |
| 4½ to 8 inches | 65 | 53 | 63 | 51 |
| Double extra strong, plain ends, ⅛ to 8 inches | 58 | 47 | 56 | 45 |

**Boiler Tubes.**—Effective on Saturday, November 12, the National Tube Company and the outside mills lowered discounts on Steel Boiler Tubes two points, which is equal to an advance of $4 a ton. Demand for Boiler Tubes is much heavier than for some time and the mills have a good deal of tonnage on their books. The new discounts effective from November 12 for less than carload lots are as follows:

*Boiler Tubes.*

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ inches | 46 | 43 |
| 1¾ to 2¼ inches | 58 | 43 |
| 2½ inches | 60 | 48 |
| 2¾ to 5 inches | 66 | 55 |
| 6 to 13 inches | 58 | 43 |

Discounts on Boiler Tubes in carload lots are two points lower than the above.

**Merchant Steel.**—The tone of the market in Merchant Steel is very much stronger and some of the mills have advanced prices $1 to $2 a ton all along the line. Consumers anticipate still higher prices and are covering their requirements as far ahead as possible, with the result that a very heavy tonnage has been placed within the past week or two. We have advanced prices and now quote: Tire Steel, 1.50c. to 1.55c.; Open Hearth Spring Steel, 1.90c. to 2c., depending on order; Sleigh Shoe, flat, 1.45c. to 1.50c.; Cutter Shoes, tapered and bent, 2c.; Smooth Finished Machinery Steel, 1.60c.; Toe Calk Steel, 1.85c. to 1.90c.

**Spelter.**—The Spelter market is firm, with a higher tendency in prices. Prime grades of Western Spelter are held at 5.35c. to 5.40c., Pittsburgh.

**Coke.**—The Coke region is still without relief in supply

of water, and conditions as regards supply of Coke are steadily getting worse. Several of the larger plants in the region are closed down entirely, and others are running short handed. The limited supply of Coke, together with the heavy demand is causing prices to advance rapidly, especially for spot shipment. As high as $2.15 to $2.25, at oven, has been offered for Furnace Coke for prompt shipment without getting it. Contracts for Furnace Coke for first half of next year have been made recently at $1.90 to $2, at oven. The minimum price of strictly Connellsville 72-hour Foundry Coke is $2.25, at oven, with some sellers holding for $2.50, and getting it. The total output of Coke in the Upper and Lower Connellsville regions last week was about 195,000 tons, and would have been very much larger had it not been for the short supply of water. Prices of Main Line Coke have moved up in sympathy with Connellsville, and we quote Main Line Furnace Coke at $1.65 to $1.75, and Foundry $1.85 to $2 a ton, at oven.

**Iron and Steel Scrap.**—The market on Old Material continues active, and prices are very firm. One of the leading Steel concerns has recently sent out inquiries for a very large tonnage of Scrap, and should this business be placed it will no doubt advance the market further. Some dealers are not anxious to sell what Scrap they have, but are holding it for higher prices. We quote: Heavy Melting Scrap, $14.50 to $15; No. 1 Wrought Scrap, $15 to $15.50; Cast Iron Scrap, $13 to $13.50; Cast Iron Borings, $8 to $8.50; Bushleling Scrap, $14.50; Old Car Wheels, $13.50 to $13.75; Iron Car Axles, $22 to $22.50; Rerolling Steel Rails, 6 feet and upward, $15, gross; Short pieces, $15.50 to $16; Bundled Sheet Scrap, $11.75 to $12, all in gross tons, f.o.b. Pittsburgh.

## The New York Machinery Market.

NEW YORK, November 16, 1904.

For some few weeks the machinery merchants have experienced an increase of business, the growth of which has been gradual but steady. This is regarded as insuring a healthy condition of affairs, which has led to further improvement in trade during the past week. From many sources orders and inquiries are reported to be coming in in good volume, though they still continue to be mostly of small proportions. Large buyers are, however, displaying considerably more activity, which will doubtless result in the placing of some good sized orders shortly. As a result of the recent buying, New York dealers are placing stock orders, which fact is itself a good sign. One stock order for 20 lathes has just been closed.

In the first 12 days of November a manufacturer received orders aggregating $42,000, more than half the total business of his largest month, while an order from the Japanese Government for 39 lathes is reported to have been turned down because the works were full and the purchaser was not willing to pay the required advance of 15 per cent. for night work to make them.

One of the principal topics of conversation in the street is the convention of the National Machine Tool Builders' Association, which was held in this city this week, and the report of which appears in another column.

About the most important happening of the week was the sending out of specifications for machine tools by the Otis Elevator Company, 17 Battery place, which are to be installed in the company's plant at Yonkers, N. Y. The list, while not very large, calls for machinery amounting in value close to $20,000. The Otis Company has lately secured some good sized contracts, and is rearranging part of its plant to make room for the new equipment and to increase its production. It is not the intention to build any additions at the present time.

We understand that the Lehigh Valley Railroad is buying some machinery, but so far as can be learned no large order has as yet been placed with any one concern. It is possible that the company is following the course of several other large purchasers, who, though they issue specifications for a large amount of tools, buy piecemeal. Several months ago the Lehigh Valley asked bids for about $125,000 worth of tools to be installed in its new shops at Sayre, Pa., which are practically completed. The power plant equipment and blower systems for that point were purchased last spring.

When it was first announced that the Delaware, Lackawanna & Western Railroad was to construct a tunnel under the North River it was generally understood that at least part of the road was to be electrically operated. It seems now that plans are further along for installing an electric system than was supposed. The officials of the company have been watching the tests of the electric locomotive built by the General Electric Company for the New York Central Railroad, and have also been studying other systems closely. The matter has been worked out to the extent that the substitution of electricity for steam will begin as soon as a number of grade crossings along the suburban divisions can be done away with.

The Pennsylvania Railroad is receiving bids for the construction of its proposed new power house, repair shop and other buildings at the new terminal in Washington, D. C. The power house proper will be 77 x 238 feet and 64 feet high, while the repair shop will be 30 x 156 feet and 36 feet high. It is thought that the equipment for these buildings has not yet been secured, though the boilers will probably be of Babcock & Wilcox make.

The New York Central Railroad has plans prepared for a $1,000,000 storage yard at De Witt, near Syracuse, N. Y., which will include repair shops. Among the equipment to be installed will be two 80-foot turn tables. The company has adopted this size of turn table as its standard.

Machinery is now being purchased by the Continental Can Company, New York, for equipping its new plants at Chicago, Ill., and Syracuse, N. Y. The company, which was recently organized with a capital stock of $500,000, has purchased property in both of those cities, with the necessary buildings. While a good part of the special machinery has been purchased, the company will require a considerable equipment of machine tools, as machine shops will be installed at both places. The headquarters of the company are at the offices of Edwin Norton, 11 Pine street.

The recent fire at the plant of the Watson-Stillman Company, Aldene, N. J., did about $30,000 damage, but most of the loss was on the buildings. The only tools that were destroyed were the drills, which were located in a gallery which fell to the floor. It is probable that the company will require some new drills. Arrangements are being made to do the work outside which was done in the burned structures and manufacturing will not be seriously interfered with.

The Janson Steel & Iron Company, Oxford, N. J., which is starting up its rolling mill, informs us that it will be in the market for an 800 horse-power engine, several waste heap boilers, water heater, several pumps, shears and other rolling mill machinery.

It is reported that the American Axe & Tool Company, Glassport, Pa., will establish a plant in Canada.

The American Steel & Wire Company has adopted the Admiralty oiling system for the delivery of engine oil to seven of the largest cross compound vertical blowing engines in the Ohio Valley, the same being at the Central Furnaces, Cleveland, Ohio. The sole maker of this system is the J. H. Siegrist Company, New York.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 13 for machine tools for the New York and League Island navy yards, including engine lathes, gap lathes, turret lathes, shapers, planers, deck winches, magnetic chuck, grinders, drill presses, metal saw, milling machine, bench filing machine, file sharpening machine, keyseating machine, motor, oil furnace and locomotive.

The Isthmian Canal Commission, Washington, D. C., will receive bids until November 25 for a number of diaphram trench pumps.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, on December 13 for a quantity of supplies for the Mare Island and Puget Sound navy yards, including McCanna's adjustable thread and milling tools, reamers, automatic drilling and tapping machine, arbor and mandrel press, pumps, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 20 for compressed air plant, comprising locomotive, air compressor and charging air reservoir; one four-wheel coupled switching locomotive, one 24-inch engine lathe, with motors, and one 4000-pound steam hammer.

Sealed proposals will be received at the Military Academy, West Point, N. Y., until November 29 for the construction of a boiler and mechanical draft plant.

The following awards have been made for machine tools for the Portsmouth, Boston, Narragansett Bay, League Island, Annapolis and Norfolk yards, bids for which were opened October 11:

H. K. Porter Company, Pittsburgh, Pa., class 1, one saddle tang shifting locomotive, $3490.

John D. Westbrook, Norfolk, Va., class 2, one automatic tapping and drilling machine, motor driven, $490.

Pratt & Whitney Company, Hartford, Conn., class 3, one 12-inch tool maker's lathe, $607.50.

Niles-Bement-Pond Company, New York, class 26, one Leblond engine lathe, $485; class 32, one motor drive for Bement, Miles & Co. 22-inch vertical slotter, $1050.

Prentiss Tool & Supply Company, New York, class 4, one 18-inch screw cutting machine, $524.

Fairbanks Company, New York, class 5, one 14-inch emery grinder, $66.60; class 7, five pulleys, $9.38; class 23, one motor driven spur gear cutting machine, $7545; class 24, one upright drill press, motor driven, $3015; class 25, one electrically driven crank shaper, $1245.

Manning, Maxwell & Moore, New York, class 6, one sensitive friction drill, $66; class 21, one motor driven boring and turning mill, $2380; class 22, one motor driven vertical turret boring machine, $1125; class 30, one band scroll and resaw, $620.

Buffalo Forge Company, Buffalo, N. Y., class 8, one complete pumping outfit, $660.

Jones & Lamson Machine Company, Springfield, Vt., class 9, one flat turret lathe and spare parts, $1560.

Industrial Works, Bay City, Mich., class 10, one 10-ton revolving crane, $7100.

American Wood Working Machinery Company, New York, class 13, one outside molding machine, $485.50.

Crescent Machine Company, Leetonia, Ohio, class 14, one improved jointing and facing machine, $130.

Atlantic Works, Philadelphia, Pa., class 15, one heavy panel planer, $245.

Bentel-Margedant Company, Hamilton, Ohio, class 16, one horizontal boring machine, $105; class 17, one saw bench, $180.

J. W. Cregar Agency, Philadelphia, Pa., class 18, one upright drill, with sliding head, $340.

Drew Machinery Agency, Manchester, N. H., class 27, one gang dovetailing machine, $390.

Smith-Courtney Company, Richmond, Va., class 28, one extra heavy jointer, $224; class 29, one power feed surface planer, $195.

S. M. Price Machinery Company, Norfolk, Va., class 31, one turret lathe, $1435.

## Mexican Railway and Industrial Notes.

### Railway Concessions and Construction.

DURANGO, November 9, 1904.—The Pan-American Railway Company has been reorganized, the controlling interest having passed into the hands of St. Louis capitalists. David P. Doak is president of the reorganized company and the largest stockholder. Some 200 km. of the road, from the point of connection with the Tehuantepec Railway to Tonalá, in the State of Chiapas, are completed and ready for operation.

The State Government of Jalisco has been asked for a concession to construct a line of railway from Guadalajura, the capital, to Chapala and Tizapan.

An English company is projecting a railway of much importance in the States of Sonora and Sinaloa. It is proposed to construct a broad gauge line from Hermosillo, in the first named State, to Culiacan, the capital of Sinaloa, the length of the track being about 1200 km. The equipment will be of English manufacture.

Work has been commenced upon the extension of the Pan-American Railway from its present terminus at Tonalá, in the State of Chiapas, to the border of Guatemala.

One hundred kilometers of the Mexican Central's extension from Monterey to Matamoros, Tamaulipas, have been completed and inaugurated.

An extension of time has been granted for the completion of the railway from Oaxaca to Tlacolula, the date for such completion being now fixed as September 1, 1907.

A. J. Peyton has also been given an extension of time in which to complete the road for which he holds a concession from Irapuato to Arlo, in the State of Michoacan.

### Industrial Notes.

In consquence of the high rate of duty imposed upon importations of dynamite and explosives by the new law which has recently come into effect the American Dynamite Association has arranged to withdraw its large stocks of explosives now in Mexico and to abandon the field. The new duty is $210 per ton, which is prohibitive.

In the last fiscal year the United States supplied 54.41 per cent. of Mexico's total imports. The following figures are interesting as showing the comparative value of the imports from the principal countries with which this Republic has trade relations:

| Imports from— | 1903-1904. | 1902-1903. |
|---|---|---|
| United States | $42,608,768.87 | $40,795,956.45 |
| Great Britain | 10,016,151.83 | 10,331,115.71 |
| Germany | 9,541,081.40 | 9,569,038.95 |
| France | 7,472,073.20 | 6,537,289.18 |
| Spain | 3,271,660.82 | 3,029,649.97 |
| Belgium | 2,179,948.12 | 2,589,773.93 |

Large contracts are reported as having been let recently for mining machinery and equipments. These include smelters of large capacity for Torreon & Velardena, and a 5000 horse-power boiler plant.

At the annual meeting of the stockholders of the National Iron & Steel Works, S. A., of the City of Mexico, held a short time since, the dividend was passed, it being decided to apply the sum of $50,000 earned by the company's operations during the year to the improvement of the plant.

Two locomotives have been ordered by the San Juan Sugar Company, in the State of Vera Cruz, from the Davenport Locombotive Works, Davenport, Ia.

Ernesto Brunel has obtained a concession to utilize for motive power 7000 liters of water per second from the Zacapu River, in the State of Michoacan. J. J. D.

## New York.

NEW YORK, November 16, 1904.

**Pig Iron.**—The market has been fairly active, the majority of sellers showing little disposition to contract for future delivery to any extent. Furnace men state that costs have to some extent advanced and in some cases the question of importing foreign Ores is being considered, since there are indications that there may be a scarcity of Ore. We quote for Northern brands, tidewater delivery, $16.75 to $17 for No. 1 Foundry, $16.25 to $16.50 for No. 2 Foundry, $15.50 to $15.75 for No. 2 Plain and $14.50 to $15 for Gray Forge, delivered tidewater. Southern Pig Iron is being quoted at $16.50 to $16.75 for No. 2 Foundry and $15.75 to $16.25 for No. 3 Foundry.

**Steel Rails.**—There is no truth in the reports that the Steel Rail manufacturers are to meet this week. There seems to be a growing feeling that possibly present prices will be reaffirmed, which would still leave an unusual gap between Billets and Rails.

**Finished Iron and Steel.**—Bridge manufacturers do not as yet report any tonnage of any importance, and the business is rather quiet. Among the contracts taken is a lot of about 1400 tons of Bridge material for the Michigan Central Railroad. Among the work on the market is about 6000 tons for track elevation work for Chicago. The Eastern Bar manufacturers are to meet in this city to-morrow, and the Plate and Beam makers will also have conferences. Quotations, at tidewater, are as follows: Beams, Channels, Angles and Zees, 1.54½c. to 1.80c.; Tees, 1.59½c. to 1.80c.; Bulb Angles and Deck Beams, 1.64½c. to 1.85c.; Sheared Plates, in carload lots, 1.54½c. to 1.65c. for Tank, 1.64½c. to 1.80c. for Flange, 1.74½c. to 1.90c. for Marine, and 1.74½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.50c. to 1.55c.; Soft Steel Bars, 1.50c. to 1.55c.

**Old Material.**—The market has been quite active and prices have been advanced $1 a ton all along the line. Prices per gross ton in New York and vicinity are approximately as follows:

| | |
|---|---|
| Old Iron Rails | $18.00 to $19.00 |
| Old Steel Rails, rerolling lengths | 14.50 to 15.00 |
| Old Steel Rails, short pieces | 13.00 to 13.50 |
| Relaying Rails | 18.00 to 19.00 |
| Old Car Wheels | 13.00 to 13.50 |
| Old Iron Car Axles | 18.50 to 19.50 |
| Old Steel Car Axles | 17.00 to 17.50 |
| Heavy Melting Steel Scrap | 13.00 to 13.50 |
| No. 1 Railroad Wrought Scrap | 15.00 to 16.00 |
| Iron Track Scrap | 14.00 to 14.50 |
| Wrought Pipe | 11.00 to 12.00 |
| Ordinary Light Iron | 10.00 to 11.00 |
| Cast Borings | 7.00 to 7.50 |
| Wrought Turnings | 9.50 to 10.00 |
| No. 1 Machinery Cast | 13.00 to 13.50 |
| Stove Plate | 10.50 to 11.00 |

The L. K. Hirsch Company, Old Railway Material, has opened an office in rooms 520 and 521, Empire Building, 71 Broadway, New York. L. K. Hirsch will make New York his headquarters for some time. The Chicago office of the company will be maintained as heretofore.

The district executive board of the Amalgamated Association at Youngstown has effected a settlement with the Republic Iron & Steel Company for a special scale for the Williams 18-inch bar mill in the Brown-Bonnell Works in that city. The Republic Iron & Steel Company has also made a scale of wages with its employees in the Bessemer plant in that city. The wages agreed upon are practically the same that have been in force during the past year. Some slight changes were made, due to the increased output in the plant, by which the rates paid a few tonnage men were slightly reduced, their earnings, however, being as large as before. Under the system existing between the Republic Iron & Steel Company and its employees for regulating wages at the Bessemer plant, either side can give two months' notice in the event of a change being desired. The new agreement just made is effective for one year from January 1. The Republic Iron & Steel Company deals directly with its employees of the Bessemer plant, the Amalgamated Association scale not being recognized.

# The National Machine Tool Builders' Association.

Conspicuous among the transactions of the third annual convention of the National Machine Tool Builders' Association, held in New York, Nov. 15 and 16, were evidences of a strong belief on the part of the members that a return of activity in their line of business has set in and that preparations are being made by the organization to derive the full benefits to be had by standing firmly together throughout the period of the promised change of trade conditions. The meetings were all held in executive session, but when questioned on this point the members were unanimous in asserting their faith in a long continued space of healthy activity, which all agree has already set in.

While one of the topics under discussion was "Advancing Prices on an Advancing Market," and naturally the sentiment was all in favor of obtaining for the machine tool trade equal advantages with the makers of materials entering into the construction of the tools in respect to advance in prices, still no definite action was taken on this subject. It was the consensus of opinion that whereas conditions are undoubtedly on the mend, the time is not yet ripe for an advance in the prices of machine tools. A resolution was adopted which in substance held that in view of the fact that the prices of raw materials are increasing and that no decrease has been obtained in the price of labor, prices of machine tools should be firmly maintained, and the Executive Committee was instructed to maintain careful watch upon the markets, and if through the advance in prices of materials prior to the next regular meeting of the association, which will be held in the spring of next year, a change in the price of machine tools should be deemed advisable, the Executive Committee is empowered to call special meetings of any of the members of the association, or, in, fact, may call a special convention of the association, for the purpose of advancing prices.

Another topic of commercial importance discussed was "Shall Our Members, as Manufacturers, Permit Dealers to Place Large Orders When Machine Tools Are in Good Demand, with a Possibility of Same, or a Large Part of Same, to Be Canceled Should the Market Drop, or Other Conditions Arise Over Which the Manufacturer Has No Control?" This was answered by the following resolution:

"*Resolved*, That in order to prevent the cancellation of orders by dealers, it is the sense of this association that the placing of large stock orders be discouraged; and it is further

"*Resolved*, That each member is competent to best manage his own personal interests on this subject."

In connection with the discussion of the subject, "Would a modification of the tariff, particularly as applied to some European countries and markets, be beneficial to our particular industry?" it was the sense of the meeting that the association go on record as being unqualifiedly opposed to any existing tariffs or treaties that are prejudicial to the interests of the machine tool building industry, and that the association take definite steps to bring about any measures providing a revision or modification of such tariffs which may eventually lead to better trade conditions obtaining between this country and foreign countries, and particularly Russia, France and Canada, which have differential tariffs, prejudicial to the importation of American machine tools. A committee composed of Messrs. Fifield, Geier, Montanus, Reed, Hoeffinghoff and Woodward was appointed to investigate this subject and report to the Executive Committee of the association as soon as possible, so that the Executive Committee may take the matter in hand and present a suitable plan for action at the next meeting of the association.

The subject of whether the association can become owners of and successfully manage an establishment for the building of large machine tools provoked a lively discussion, the result of which is shown in the following resolution, which was adopted:

"*Whereas*, A proposition has been received by this association inviting its members to become owners and managers of an establishment for the manufacture of large machine tools, be it

"*Resolved*, That it is impracticable for this association as an association to become the owner of such a plant."

A committee, composed of Messrs. Montanus, Hoeffinghoff and Davis, was appointed to deal with this matter should the necessity of future consideration arise.

What is regarded as an important step in connection with the driving of machine tools was taken on Tuesday afternoon, following upon the discussion of the topic "Shall our association recommend or adopt a uniform selling price for attaching or preparing machine tools for receiving motors?" In this discussion the price feature was lost track of entirely, in view of the fact that it was considered necessary first to arrive at a definite conclusion concerning a standard method of attaching the motors to the tools, in which both the makers of the tools and the motor manufacturers should concur. The necessity for adopting such a standard was clearly shown One of the members, who is a prominent lathe manufacturer, stated that the problem of electric drive was becoming a very serious one at his works, in view of the fact that at present 25 per cent. of the product of his factory was being arranged for electric operation. He called attention to the fact that the belt driven lathes can be manufactured in large lots on the duplicate part system, but that in the case of the electric drive lathes each lathe becomes a special tool, because in placing upon it the type of motor desired by the customer, and in view of the absence of uniformity among the various types of motors it is essential that special appliances applicable only to that particular case can be used. It is the object of the association to eliminate this condition, so that to a large extent at least it will be practicable to build motor driven lathes upon the same manufacturing basis as is being done in the case of belt driven machines. The discussion was opened by the reading of a paper contributed by Fred A. Geier, secretary and treasurer of the Cincinnati Milling Machine Company. Mr. Geier's paper was in substance as follows:

"The success of direct connected motor driven machine tools has been thoroughly demonstrated and they are here to stay. Much of the uncertainty connected with the design of tools suitable for motor driving has been eliminated during the past 12 months by those manufacturers of electrical machinery who have given a great deal of attention to the subject of supplying suitable motors.

"However, a satisfactory solution of the general problem has not yet been arrived at by any means, and in order to arrive at a satisfactory solution it will be necessary for us machine tool manufacturers to first of all decide upon a standard speed range for variable speed motors, speed range that will cover the entire field of machine tool driving. This point settled, we can put the matter before the motor manufacturers, and should have no difficulty in getting them to bring out a line of such motors as a standard for machine tools. There is considerable variation in the specifications issued by the several machine tool builders at the present time, because each of us has been struggling along as best he could and applying a motor that seemed to offer the least difficulties.

"The fact that at the present time nearly all of the more important motor manufacturers are offering what they are pleased to call a machine tool motor with considerable speed variation through shunt field control indicates at once the general trend of machine tool requirements. In order to arrive at definite figures let us analyze the case of the milling machine. From experience we find that we need a speed variation of 150 per cent. in the motor—that is, a maximum speed of two and one-half times the minimum speed. This is more speed range than is required by some tools, but probably falls a little short of the range required by others. However, it would seem that a motor that would be suited to milling machine driving would have plenty of range for any other machine tool. This will be clear from a further analysis of the problem: We require a speed range at the spindle of, let us say, from 25 or 30 to 1. By using a motor with a 2½ to 1 speed variation, and then applying double back gears to the machine, we got this speed range without any difficulty whatever. The method of speed variation of such motors through shunt field rheostat supplies plenty of speeds between the gear speeds. The Ward-Leonard Company supplies these with anywhere from 35 to 120 steps or speeds on small motors. The back gear problem simplifies itself on those machines that require less speed range.

"The Cincinnati Milling Machine Company has standardized the electric drive arrangement for its milling machines, and is at the present time prepared to supply any size of miller with any one of half a dozen of different makes of direct current, variable speed, shunt wound motors with a 2½ to 1 variation in speed, and is thus in a position to meet the wishes of practically all its customers in regard to the selection of a motor.

"But this does not completely end its trouble, because every one of the half dozen motors it can use with its arrangement is entirely different in shape and size from any one of the others. It is, therefore, necessary to make up special parts to suit the particular motor specified on every order. This prevents the company from standardizing all parts and carrying them in stock, and therefore increases the cost of the motor driven machine considerably over what it would be if all makes of motors of given horse-powers had frames that were standard in certain important particulars. In order to manufacture motor drive parts for machine tools economically, by making

them up in lots for stock, motor frames must be standardized in the following respects:

"1. Size and shape of the base.

"2. Distance from the center of the driving pulley to the center of the base.

"3. Hight of the motor from the bottom of the base to the center of the armature shaft.

"4. Diameter of the armature shaft.

"For a standard speed variation we believe that 2½, or, at the most, 3, to 1 would be entirely satisfactory to meet the general problem, and these speeds should, of course, be kept as low as possible, with a minimum speed somewhere below 700 revolutions per minute.

"After a little thought it will be obvious that this standardization of motor frames will not involve great expense to the motor manufacturers, since, with the single exception of the armature shaft, it is entirely a question of size and location of the base of the motor with relation to the center of the pulley.

"The advantages of such a standardization is at once apparent to all machine tool builders, as it would enable them to standardize their motor drive arrangements, carry all parts in stock, and therefore considerably reduce the present cost of motor driven machines. It would also be of equal advantage to the manufacturers of electrical machinery, as it would enable each one of them to enter into competition on an even basis with all the others for supplying motors for driving tools. It would also enable them to go ahead at once and make up these motors in large quantities and carry them in stock especially for machine tool purposes, and they could thereby reduce the cost of these considerably over the present method of making each motor to order. It is obvious that a combination of the reduced cost of motor and the reduced cost of the tool, as a result of standardization, would also materially reduce the now almost prohibitive selling price of motor driven machine tools.

"There is one other point—delivery. At present, prospective purchasers who have about decided to buy become very much discouraged and often drop the matter entirely because of the fact that they must wait a long while for delivery, because both the tool builder and the motor manufacturer do not have parts in stock. All this will be eliminated by standardization.

"Motors for machine tool drives must be standardized in the very near future, and the sooner this is done the better it will be for all concerned. If specifications can be decided upon now and the matter carried through it will enable both the machine tool and motor manufacturers to carry parts in stock, make prompt deliveries, reduce their costs, and therefore lower their selling price to such an extent as to have an immediate direct influence and result in an increased sale of electrically driven tools."

W. H. Powell, representing the Bullock Electric Mfg. Company, offered the following contribution to the discussion:

"There are on the market to-day several different systems for operating variable speed motors.

"1. Single voltage system, in which speed variation is obtained by field weakening. In this system variation in speed as high as 6 to 1 has been obtained by special motors.

"2. Three-wire even voltage system, in which system speed variation of 4 to 1 is obtained.

"3. Multiple voltage systems, consisting of three and four wires, in which systems a speed range of 7 to 1 or as high as 10 to 1 is obtained.

"In determining the proper speed variation for motors driving machine tools there are two points to carefully consider:

"1. In all of these systems, and also for motors operating at a constant speed, the size and weight of the motor is dependent to a great extent on the minimum speed at which the motor is required to develop its full rated power; and the slower the minimum speed the greater will be the size and weight for a given horse-power output. For example, if a given frame and armature core, when wound for 1000 revolutions per minute, will develop 10 horse-power output at a constant speed and continuous service, it will develop only 5 horse-power when wound for 500 revolutions per minute, constant speed and continuous service.

"2. As a gear or chain drive is used on motors operating machine tools, the maximum speed of motor is dependent on the tooth speed of the motor pinion, or chain sprocket; or upon the maximum ratio of speed reduction between the driven shaft and the motor shaft. The maximum speed of the motor on most machine tools varies from 1000 to 1800 revolutions per minute, and assuming 1500 revolutions per minute is an average value for the maximum speed, we will endeavor to show how the output of a given size motor frame and armature core varies on the different systems of speed control, and also when operated at different amounts of speed variation.

"We will assume that a given frame, when wound as a constant speed motor at 1000 revolutions per minute, will have an output of 10 horse-power for continuous service.

SINGLE VOLTAGE.

"When suitably wound for a variable speed motor, to be operated on single voltage, this frame will give an output of 7½ horse-power, with speed range from 750 to 1500 revolutions per minute, and when suitably wound for a speed variation of 3 to 1 it will give an output of 5 horse-power from 500 to 1500 revolutions per minute. In both of these cases the overload capacity at the lower speeds for intermittent duty would be not over 20 per cent., while at the higher speeds the overload capacity is practically zero. For machine tool work the rating of the 2 to 1 motor would be 7½ horse-power, and the rating of the 3 to 1 would be 5 horse-power.

THREE-WIRE EVEN VOLTAGE.

"The speed range of a motor operated by this system is 4 to 1, and the motor would have a rating of 3.75 horse-power from 375 to 750 revolutions per minute, and 7.5 horse-power from 750 to 1500 revolutions per minute. Its horse-power rating through the entire range of 4 to 1 would be, therefore, 3.75, and the horse-power rating throughout a range greater than 2 to 1 and less than 4 to 1 would also be 3.75 horse-power. A motor when operated on this system has an overload capacity for intermittent loads of from 15 to 20 per cent., at speeds from 375 to 500 revolutions per minute. The overload capacity at the speeds from 500 to 750 revolutions per minute is practically zero, so that the rating of the motor for machine tool duty would be 3.75 horse-power.

MULTIPLE VOLTAGE SYSTEMS.

"The multiple voltage systems have an advantage over the three-wire even voltage system in that they can be operated at partial speed ranges with an increase in the capacity of the motor. If operated through a speed range of 2 to 1—that is, from 750 to 1500 revolutions per minute—the motor would have a rating for a continuous duty of 7½ horse-power. It can be overloaded, however, at least 50 per cent. for a short time at any point in the speed range without overheating or without serious sparking. For the intermittent loads of machine tools the motor could have a rating of 10 horse-power. If the speed range were increased to 3 to 1, and the motor operated from 500 to 1500 revolutions per minute, it would have a rating of 5 horse-power for continuous duty; but for machine tool duty it could be rated at 7½ horse-power throughout the range. If the speed range were increased to 4 to 1, and the motor operated from 375 to 1500 revolutions per minute, it would have a rating for continuous service of 3.75 horse-power; but for the intermittent duty of machine tools, it would have a rating of 5.5 horse-power throughout the speed range. It will thus be seen that for a given horse-power output, the size of frame and weight of machine can be greatly reduced if motors are operated on the multiple voltage system than on either the single voltage or the three-wire even voltage, provided the speed range is the same. The multiple voltage systems, however, require a separate balancing set, and an increase in the number of the transmission wires to the motors.

"There is, therefore, a great demand for variable speed motors operated on the two-wire system. For this system motors with special commutating poles or compensating coils have been placed on the market with a speed range as high as 6 to 1. A properly designed motor without these special parts can be operated through a speed range of 3 to 1 without undue heating at the lower speeds, and without sparking at the higher speed; but no matter what the design of motor or the method of speed control, the size and weight, and consequently the cost, is dependent on the slowest speed at which the motor is required to develop its full rated power.

"It is, therefore, desirable to keep the speed range down to a reasonable amount, which in our judgment is 3 to 1, with a minimum speed of 400 to 660, depending on output of motor."

B. G. Fernald of the Northern Electrical Mfg. Company told of the efforts which his company is making along the lines of furnishing a motor on the single voltage system, which can be applied to any two-wire system and which is especially applicable to machine tool practice. J. D. Maguire,, president of the American Electric & Controller Company, said that his company was producing a controller for electric motors which can be operated from the apron of the tool or from the top of the controller proper, giving a variation of 4 to 1 on any shunt wound motor having a field range between 25 and 30 per cent. Giving an instance of actual results obtained, he said: "In a modern belt driven plant a mechanic working on piece work faced 27 cylinder heads a day; with electric drive and rheostatic control he faced 38 cylinder heads per day, and with our controller he did 67 cylinder heads per day."

M. F. Reardon of the General Electric Company also

spoke of the efforts which his company is making in the direction of solving the question of motor drives for machine tools, and suggested that the association follow the course taken by the Engine Builders' Association, which appointed a committee to confer with the various electric companies in the matter of standard generator bases, and which has come to a successful issue. Following upon this suggestion a committee composed of Messrs. Woodward, Lodge, Geier, March, Tuechter, Binsse and Wetsel was appointed to confer with the manufacturers of electric motors and submit recommendations as to standard mountings and dimensions at the next meeting of the association.

It was decided to hold the next meeting of the association at Washington, D. C., at a time when the members can conveniently arrange to attend it, in conjunction with the spring meeting of the American Society of Mechanical Engineers, which is to be held at Scranton, Pa.

The following officers were re-elected for the coming year: President, William Lodge; first vice-president, William P. Davis; second vice-president, F. E. Reed; secretary, P. E. Montanus; treasurer, Enoch Earle.

## Metal Market.

NEW YORK, November 16, 1904.

**Pig Tin.**—During the entire week the market has been quiet and prices have not changed. The fact that stocks of Tin are well under control serves to hold the market up to its present level, notwithstanding that consumers are showing a very languid interest in the metal, and owing to recent developments the statistical position is not regarded quite so favorably as it has been of late. Shipments from the Straits for the first half of the month were quite heavy, reaching a total of 2540 tons, as against 1660 tons for the corresponding period last year. Domestic demand is extremely light and transactions were confined almost entirely to speculative buying. At the close local prices were quoted as follows: Spot, 29c. to 29.25c.; November, 28.87½c. to 29.12½c.; December, 28.75c. to 29c. The closing London prices were: Spot, £132 5s., and futures, £131 5s., a decline of 2s. 6d. and 5s., respectively. The arrivals since the first of the month have amounted to 1105 tons and the "afloats" are estimated at 1895 tons.

**Copper.**—The market throughout the week, up to to-day, was very feverish and excited, and prices were rushed upward rapidly, both here and in London. All grades of Copper scored advances, and a scramble to buy, both here and abroad, caused violent movements in the market. Some very large orders were placed during the excitement. To-day, however, there was a marked subsidence of the turmoil, following a sharp decline in prices in London. At the hight of the advance Lake Ingot soared to 14.87½c., and the prediction was freely made that the 15c. point would be reached; but this did not materialize. The movement was attributed entirely to speculative influences and is thought to have now culminated. The market closed strong, however, at the following figures: Lake, 14.25c. to 14.87½c.; Electrolytic, 14.50c. to 14.75c.; Casting, 14.25c. to 14.62½c. London prices, after reaching £66 17s. 6d. for spot, closed to-day at £65 15s., and futures, after reaching £67 7s. 6d., closed at £66 5s. Best Selected is quoted at £70 10s., an advance of £3 5s. from last week. The exports of Copper for the first half of the month amounted to 8317 tons, which is considerably less than the average of any two weeks in last month.

**Pig Lead.**—With an active demand and a marked scarcity of spot stocks, the Lead market has advanced and is very strong. Spot Lead in New York is firm at 4.60c. to 4.70c. Offerings from the West are very light and the St. Louis market is higher at 4.40c. The American Smelting & Refining Company continues to quote on a basis of 4.20 for "shipment" Desilverized in 50-ton lots, but this quotation relates only to December shipment and at the price then ruling; consequently, it is purely nominal. The London market is firm and was quoted to-day at £13.

**Spelter.**—The market for Spelter is very firm and a fraction higher. Demand is fairly good and supplies are light. Spot Spelter was quoted to-day at 5.45c. to 5.55c. The St. Louis market has stiffened again and is quoted at 5.35c. London cables £25, an advance of £1 over last week.

**Antimony.**—The demand for Antimony is active and supplies are scarce. Prices show a sharp advance over last week's quotations. The market closed very strong, with Cookson's quoted to-day at 8c. to 8.75c., Hallett's at 8c. to 8.50c., and other grades at 7.75c. to 8.50c.

**Nickel.**—The usual amount of business is passing and prices are nominally quoted for large lots at 40c. to 45c. and smaller quantities at 50c. to 60c.

**Quicksilver.**—The market remains the same as last week, flasks of 76½ lbs. being quoted at $40. London is unchanged at £7 15s.

**Tin Plate.**—Following the advance in Billets and Bars, the American Sheet & Tin Plate Company announced to-day an advance of 15c. a box in the base price of Tin Plate, to $3.45, Pittsburgh, for 14 x 20 100-lb. Coke Plates, making the price $3.64, delivered in New York. This advance was not a surprise to the trade, as action in this direction had been expected for some little time. The amount of the advance, however, was probably less than was generally anticipated. The demand for Tin Plate has been rather more active, with a large volume of inquiry for deliveries in the first quarter of next year. The Welsh market has advanced 1½d., to 12s. 1½d. per box, f.o.b. Swansea.

We are indebted to L. Vogelstein, New York representative of Aron Hirsch & Sohn, Halberstadt, Germany, for the following figures of the German consumption of foreign copper for the months January to September, inclusive, 1904, as compared with the same period of time for 1903-1902:

| | 1904. | 1903. | 1902. |
|---|---|---|---|
| | | Tons. | |
| Imports | 83,845 | 63,527 | 62,091 |
| Exports | 6,379 | 7,797 | 6,718 |
| Consumption | 77,466 | 55,730 | 55,373 |

Out of the above 70,052 tons were imported from the United States, against 46,573 tons for 1903.

## Iron and Industrial Stocks.

NEW YORK, November 16, 1904.

In spite of the checking of business due to the storm of the early part of the current week, the stock market has continued very active and, on the whole, the tendency has been upward. There have been indications at times of very heavy realizing, but the movement has been met by fresh buying. Steel preferred worked up to 88¾ on Tuesday and common reached 28⅛. There have been large transactions at rising prices in Tennessee and in Sloss-Sheffield. At 2 p.m. to-day closing prices on active stocks were as follows: United States Steel common 27⅜, preferred 87½, new 5's 88¾; Tennessee Coal & Iron 75; Car & Foundry common 31⅛, preferred 88¼; Colorado Fuel & Iron 47; Sloss-Sheffield common 62¼, preferred 99; Pressed Steel common 34¾, preferred 84; Railway Steel Spring common 33, preferred 87⅜; Locomotive common 30½, preferred 99; Republic common 15¾, preferred 64⅝; Can common 9⅞, preferred 52⅞.

**Dividends.**—International Power Company has declared another dividend of 3 per cent. on the preferred stock, payable January 16. This makes the third dividend of this amount that has been declared on the stock within the last month.

National Lead Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable December 15.

The Carnegie Steel Company, which operates the Bessemer & Lake Erie Railroad, hauling ore from Conneaut to Bessemer, is anticipating a very heavy ore movement for next year. Orders have been placed for 1000 new steel ore cars and 10 locomotives, and orders for additional equipment will be placed. In August the Bessemer & Lake Erie Railroad hauled 645,920 tons of ore, in September 617,095 tons and in October 620,627 tons. The average for November to date is about 25,000 tons a day. It is expected that the Bessemer & Lake Erie Railroad will haul this year about 4,250,000 tons of ore against about 4,000,000 last year. Lake navigation is expected to close about December 6 next.

The Lackawanna Steel Company has made an arrangement with M. A. Hanna & Co. of Cleveland under which the latter operate one of their Buffalo furnaces for a period of six months for the Lackawanna Company. The latter furnishes the ore.

Some splendid records for production are being made in the skelp and Bessemer departments of the Riverside department of the National Tube Company at Wheeling, W. Va. In October the best previous record in the skelp department was broken by 919 tons and in the Bessemer department a gain of 612 tons was made in October over the best previous month. F. H. Crockard is manager of the Riverside department, while Thomas Beattie is superintendent of the skelp and Bessemer departments.

Telegraphic advices have just been received announcing the death yesterday at South Bethlehem, Pa., of Dr. T. M. Drown, the president of Lehigh University, and the secretary for many years, in its earlier days, of the American Institute of Mining Engineers.

# HARDWARE.

WHAT was to be expected has happened. The attempt to cut off the supply of goods to the catalogue houses is resulting in retaliation on their part, inasmuch as one of the prominent retail mail order houses is making a deep cut in the published prices for a line of goods which the manufacturers loyal to the wishes of the trade had refused to continue selling them. This occurrence brings up the whole question as to the wisdom of a policy which would attempt to shut off the supply of goods from these houses. If it were feasible to make it impossible for catalogue houses to obtain goods the attempt might be justified, but few think that in the long run this policy will be successful. In any event, the policy is sure to provoke open hostility, and to result in a disturbance of trade relations, and almost inevitably in a further lowering of prices, to the disadvantage of all concerned. This is greatly to be regretted, as the situation is made, for the time being at least, worse instead of better. The course things seem to be taking will evidently strengthen the position of those who advocate a resort to less radical measures.

Some of the advantages of organization among the retail merchants are found in the opportunity for their representation at the gatherings of manufacturers and wholesale merchants. In this way the interests of the multitude of distributers who are in direct contact with the purchasing public can be recognized and given official expression. Their relations to the various trade questions or practices which have for too long a time been principally determined in view of the interests of the manufacturers and jobbers can thus be given voice and taken into account in discussions in regard to them or in endeavors to settle them by concert of action. The tendency to admit retail merchants into the trade councils is illustrated in the fact that at the Atlantic City conventions this week the official representatives of the National Retail Hardware Dealers' Association will be present, if in no other capacity as members of the Joint Committee on the catalogue house question. While their presence is a recognition of a large principle, there is no doubt room for a broader application of the principle than has yet been accorded to it, as the representatives of the retail trade are admitted into many conferences vitally affecting their interests in which as yet they have no part. The growing recognition of the importance and power of these merchants is, however, significant, and gives promise of a more liberal and consistent treatment of them in the near future.

Another illustration of the tendency toward a drawing together in council of the various interests of the trade is furnished in the fact that at the annual convention of the National Association of Agricultural Implement and Vehicle Manufacturers, held at Chattanooga the present week, representatives of the National Federation of Retail Implement and Vehicle Dealers' Associations are invited to be present. In his annual address President Myers of the manufacturers' association emphasizes the fact that the interests of manufacturer and dealer are mutual and their relations should be harmonious and intimate. The manufacturers' association is indeed pledged to the promotion of the interests of the distributers and to co-operation with them in efforts to bring about improvements in the trade at large. Much is certainly to be gained by conferences and close relations between these classes. Instead of endeavoring to make all that can be made out of the retail merchants by those from whom they purchase their goods, there should be a recognition of the broad principle that a consideration for these distributers should have a large place in the general councils, not only because their welfare is the foundation of the welfare of the trade as a whole, but in view of the fact that as a numerous, responsible and influential body the actual distributers to the public of Hardware and allied products are entitled in large measure to determine the policy which should be pursued in matters which affect their interests.

## Condition of Trade.

Practically all the indications point to an improved tone in the market, and to a larger demand for goods and manufactured products generally than has prevailed for some time. The basis for prosperity which is laid in crops, for the most part very large and commanding good prices, certainly sufficient to make the aggregate of value compare well with any recent year, is justly recognized as giving ground for anticipations of renewed confidence and an increased volume of business. With these general features of the situation the progress in the Iron market toward higher values is having important influence on the Hardware and related trades. A firmer tone is perceptible. Some advances have already taken place, and in many important lines former concessions are withdrawn, and there is a reluctance to book orders for future execution. Under these influences the demand has been stimulated, and merchants large and small are prudently scrutinizing the market with a view to availing themselves of opportunities to purchase before advances which are likely soon to occur actually take place. Goods which are recognized as unduly low, some of them feeling the effect of unreasonable competition, are thus naturally the object of special attention, and in such lines there is a relatively large volume of business doing. In all this there is not much of a really speculative spirit, as few houses are disposed to buy beyond their requirements, but at the same time there is a disposition to interpret their necessities more liberally and to contract for goods to cover a better state of trade than has characterized the greater part of the present year. Some of the leading jobbing houses are thus buying with more courage than for some time, and manufacturers' order books show the effect. This state of things naturally induces a conservative spirit among the producers of goods and efforts to make sales at low prices are not as earnest or continuous. Manufacturers are careful, too, to cover themselves in the matter of raw material. With this improved feeling and somewhat increased business there have not, however, as yet been a great many actual advances in the general lines of Hardware. Most manufacturers are content with the steadying of prices and the cutting off here and there of extra concessions and inducements. Even this in many lines has not been done, and the market remains without important modification in miscellaneous lines. That there is a decidedly hopeful feeling where a month or two ago it was wanting is undoubtedly true, and the trade approaches the holiday season in a mood to let business well being contribute to the cheerfulness which marks the closing of a reasonably good year, with at least encouraging prospects for the months to come.

## Chicago

It is the general impression in the trade here that just now an opportunity is offered to jobbers and retailers to lay in stocks or to make contracts for goods at lower prices than are likely to rule later. In other words, while raw materials have advanced and while business has greatly improved, prices on most Hardware goods have not yet advanced. Indeed, there are many lines at the present moment that are being sold by manufacturers at cost or below, and advances will be made as soon as manufacturers can get together and agree upon them. Strap and T Hinges are in this class, but prices are being held down by the large producers in order to freeze out troublesome competition. Picks and Mattocks are extremely low. Bright Wire Goods are low, even in proportion to the present low price of Wire, and when Wire advances, as it is almost certain to do, these goods will advance probably in even greater proportion than the Wire itself. Door Hangers, Door Rails and the like are extremely low in price owing to competition among makers, though Door Rail has just been advanced. Sash Weights have been advanced, having been selling as low as $17. The demand is very active in this locality, and this, together with the rapidly increasing cost of Scrap Iron, has led to the higher prices, which may go still higher. The increasing cost of Copper is sure to be reflected in higher prices for Brass and Copper Goods. Cotton Sash Cord is ½ cent higher. Manufacturers themselves realize the state of affairs and have given instructions as a general rule to their salesmen to avoid booking business for future delivery as much as possible. In fact, many makers refuse to take contracts for spring delivery at present prices. Nails, Barbed Wire and Smooth Wire are strong, with advances expected before long. Trade in winter goods is excellent, and there is a disposition on the part of retailers generally to get their orders booked for spring and summer lines. It looks now from the character of orders being booked that trade on holiday goods, particularly on Skates, Sleds and high grade Cutlery, will be exceptionally favorable.

## Cleveland.

The W. Bingham Company.—Now that the excitement attending the Presidential election is over, the trade generally seems to be settling down to business and everybody is in a hurry to be served. We also notice that the orders are getting much larger—that is, more items and larger quantities. This goes to show that the trade is having and anticipates having in the future a good business and is going to prepare for it. There has been altogether too much hand to mouth buying in the last six months, and we urge customers to sort up more liberally, have the goods on their shelves when customers call for them, and not divide up their business into so many small orders. It will be better for all concerned.

Money is plenty, wages are fair to those who wish to and will work, and we see no reason why we should not have continued prosperity for an unlimited time.

A great many goods in the Shelf Hardware line are very low in price, and it would seem to us that an advance in raw material and the cost of manufacture would warrant an advance in the price of Carriage Bolts, Coach Screws, Machine Bolts, Tire Bolts, Stove Bolts, Wrought and Cast Butts, Strap and T Hinges, Shovels and Spades, Flat and Round Head Steel and Brass Screws, and we believe we advise customers righly when we say buy freely of these goods and kindred lines at present prices.

Also do not forget that the holidays are near at hand, and if you have not purchased your stock of Carvers for Thanksgiving and Cutlery and Fancy Goods for Christmas trade you had better attend to it at once. A well assorted and a well displayed line of these goods in your store will be attractive to your customers and profitable to you.

## Philadelphia.

Supplee Hardware Company.—Trade continues without much change in volume, although it showed some liveliness within the last few days, due probably to the fact that there was a little lull a few days before the election. People were talking election, and were probably more interested in that than they were in either buying or selling. This was the case with the retail merchant as well as the consumer; consequently salesmen could not get their attention for a few days, but it has been followed up by good orders, mail and otherwise, in the last two or three days, and everything looks encouraging for a continuance of fair trade between now and January 1.

We think the stocks of jobbers of Hardware in our city have been kept in good condition. None of them has felt inclined to starve his stocks, nor do we think the outlook or conditions warrant this.

## Louisville.

Belknap Hardware & Mfg. Company.—The iron markets themselves seemed to have taken a hand in betting on the election, so persistent in one direction were all the odds beforehand. Prices were jolted up nearly every day, so that when the final national figures by States came out in Wednesday morning's papers there was little left for a buyer to do but to accept them as confirmatory of No. 2 Foundry's behavior for the past two months. In short, buying has been so active for weeks that the market is fairly well established on a higher plane.

We do not see anything now to prevent the various considerable undertakings, perhaps temporarily suspended, from gathering fresh courage and proceeding uninterruptedly. We look for larger operations in building, mining and improvements of various kinds, while we know that the agriculturist is extremely busy. He just wants a few more years "like the last."

A crop of inquiries from various publishing quarters have begun to arrive, indicating the intent of the inquisitive editor to gather symposiums on certain topics of supposed general interest. For example, the questions read about thus:

"1. What can be done to increase the distribution of Hardware?

"2. What channels do you yourself employ? (London Assurance, this!)

"3. What did your cash look like last Saturday night?

"4. What can possibly be done to improve on the morals of those engaged in the Hardware business?

"5. Have you a framed copy of the Ten Commandments hanging over your office mantelpiece?

"6. Do you read them every day?

"7. Do you ascribe your success in business to so-doing?" &c.

The answers to the above need not be strictly categorical, but in any way which may make them diverting to the trade. The redeeming feature about them is that a stamped envelope is invariably inclosed, which is not always done by the young man in quest of a situation, or by the "Underground Novelty Company," which writes you for information about its possible new customers in the Ghetto.

We are usually pleased to help out the general cause in these cases, and any article which strikes your readers particularly bright and spicy and original, signed variously "Reader," "Jobber," "Anxious Contributor," &c., may be traced, if desired, to our immediate locality.

## Baltimore.

Carlin & Fulton.—There seems to be a general opinion held by all classes of buyers, large and small, that heavy goods have touched the bottom, and that early advances may be expected, especially in Nails and Wire. The basis for these expectations is that stocks have been kept low everywhere, and general conditions of the country indicate a good business in all branches of trade throughout the coming year.

The elections being over, the attention of the financial and business world may now be turned to the development of commerce and trade without interruption for some years to come, and though each individual voter may not have succeeded in electing his own particular candidate, yet, after all, the disappointment of the defeated is mostly sentimental rather than otherwise.

This week the absorbing topic will be the conventions of the jobbers and manufacturers at Atlantic City, and it is to be hoped that the joint conferences and discussions will result in great benefit to all classes of trade.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business during the month of November has been remarkably good, and sales will show an increase over same month of last year. There has been a very heavy movement of winter supplies, such as Heating Stoves, Coal Hods, Stove Boards and Fire Place Goods. The sales in the Gun and Cutlery department have been unusually large, sales of Single Barrel Guns being the heaviest ever known, which is partly due to the low price at which these Guns are now being sold.

The Iron and Steel market generally seems to be in a better and a more satisfactory condition than for a long time. The advances on Pig Iron have strengthened the entire line. We have received two advances on Bar Iron during the past two weeks. Many manufacturers have withdrawn quotations on their goods and will not take any orders except for immediate shipment. A number of others have notified the trade of slight advances, and everything indicates a very firm and higher priced market for 1905.

The South has been enjoying an unusual degree of prosperity for the past two years, and it seems that this will not only continue but increase. The farmers and planters have harvested abundant crops, which have brought high prices, and consequently they have plenty of money. The storekeepers and merchants were never in a more prosperous condition; they are carrying larger and better assorted stocks than ever before; they are buying liberally and discounting their bills. Many of the shrewdest dealers have recently been placing rather large orders, both for immediate and future shipment. Collections are splendid, and the month of November will be one of the heaviest and most satisfactory months in the collection department that we have had this year.

### Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—There is little that is new or interesting concerning the trade situation here in the Pacific Northwest. Weather so far has been all that could be wished for. While rains did not come as early as usual, the fine weather has held on longer, so that farmers have been able to seed all that they desired.

We trust it will not be long before we can report a better demand for lumber and live stock, as we feel sure when there is an improved condition in these industries that trade will show a decided quickening. We are drifting into the season where it is natural to expect a slackening in demand for goods under normal condition; consequently do not notice the falling off we otherwise would.

Collections are slow, but the credit man is pounding them on the back for all that is coming and scanning credits closely.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The general business situation remains fully as favorable as it was at time of our last report. All kinds of seasonable merchandise are going into consumption rapidly, and the general volume of business is fully up to expectations. Orders from the country cover well assorted lines of goods, showing that retail dealers are enjoying a steady and continuous demand.

The outlook for future business is very promising. A very large quantity of grain and corn will be marketed during the next few months, which will place heavy amounts of money in circulation, and it is expected that this important feature will create a season of business activity that will extend well through the winter months.

## NOTES ON PRICES.

**Wire Nails.**—The expected and much talked of advance in price has not been made, and no official intimation of the time of such a change has been given. Orders received by the largest producer during November have been large in volume, which may delay some deliveries beyond the contract limit. The market is firm, and the question of price is seldom raised by purchasers. Quotations to either jobbers or retailers are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent discount for cash in 10 days:

| | |
|---|---|
| Carload lots | $1.60 |
| Less than carload lots | 1.65 |

*New York.*—Dealers are desirous of placing orders for delivery further ahead than 30 days, but contracts of this character are not being accepted. Orders for current demands are being received in good volume, while business in small lots from store is satisfactory. The market is firm at the following New York quotations: Single carloads, $1.79½; small lots from store, $1.85 to $1.90.

*Chicago, by Telegraph.*—Prices on Wire Nails are unchanged thus far, but advances are looked for. These advances may not come until January or February, when the spring trade opens up, but when they do come they will be welcomed by independent producers, who are placed at a disadvantage by the increased cost of Billets or Wire Rods and the continued low prices of finished products. Carload prices to either jobbers or retailers are firm locally at $1.75 base, with less than car lots at $1.80 to $2, according to quality. Makers still refuse to sell more than 30 days ahead at these prices.

*Pittsburgh.*—As yet the expected announcement of an advance in prices of Wire Nails has not been made, but it is liable to be made any day, possibly before this week is out. Jobbers are willing to place contracts for three or four months ahead, but the American Steel & Wire Company, Pittsburgh Steel Company and other Wire Nail concerns continue to refuse to book contracts for Wire Nails except for shipment within 30 days from date of contract, in order to have as little tonnage on their books as possible when the expected advance in prices is made. The tonnage in Wire Nails is extraordinarily heavy and is pushing the capacity of the mills to the utmost to meet it. The tone of the market is very strong and prices are being rigidly held. We quote Wire Nails in carloads to either jobbers or retailers at $1.60, and in less than carloads $1.65 f.o.b. Pittsburgh, terms, 60 days, or 2 per cent. off for cash in 10 days.

**Cut Nails.**—The next meeting of the Cut Nail Association is scheduled for December 8. Demand has increased in anticipation of the possibility of higher prices. Quotations are as follows: $1.60 and $1.65 for carload lots and less than carload lots, respectively, f.o.b. Pittsburgh. In the East Iron Nails are quoted at the same price as Steel Nails, but in territory west of Pittsburgh Iron Nails are quoted in carload lots, f.o.b. Pittsburgh, at $1.65, with an advance of 10 cents in less than carload lots.

*New York.*—Local demand is of a moderate character, with a firm market. Quotations are as follows: Carloads on dock, $1.74; less than carloads on dock, $1.79; small lots from store, $1.85.

*Chicago, by Telegraph.*—Steel Nails have been selling in Chicago territory at from $1.70 to $1.75 for several months, but the increasing cost of Nail Plate or raw material in general is tending to eliminate the $1.70 quotation. Pure Puddled Iron Nails can easily be sold, particularly in Shingle sizes, at 10 cents advance.

*Pittsburgh.*—Prices of Cut Nails are very firm and demand is heavier than in some months, the trade anticipating higher prices for Cut Nails in the near future. We quote Steel Cut Nails at $1.60 in carloads and $1.65 in less than carloads, f.o.b. Pittsburgh. For Puddled Iron Nails an advance of 5 cents a keg over Steel is charged.

**Barb Wire.**—An unusually heavy demand for the season continues, due to favorable weather for building Fence and to the expected advance in price. If mills would permit, jobbers would no doubt place contracts for some time ahead, but the leading producer still restricts contracts to shipment within 30 days. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| Jobbers, carload lots | $1.75 | $2.05 |
| Retailers, carload lots | 1.80 | 2.10 |
| Retailers, less than carload lots | 1.90 | 2.20 |

*Chicago, by Telegraph.*—Business continues in good volume, the mild weather prevailing permitting the extension of Fence work beyond the ordinary period. Prices are unchanged and are firmly held, except in territories where the leading producer is opposing strong local competition. We quote: Jobbers, car lots, Painted Wire, $1.90; Galvanized, $2.20; retailers, car lots, Painted, $1.95; Galvanized, $2.25; less than car lots, Painted, $2.05; Galvanized, $2.35; Staples, $1.85; Galvanized Staples, $2.15. The jobbers' prices are named to large retailers by certain independent mills.

*Pittsburgh.*—The demand for Barb Wire continues heavy, more so than usual at this season of the year, due to the mild weather and the expected advance in prices which may be made before this week is out. Jobbers would be glad to contract ahead for three or four months, but the mills refuse to book orders, except for shipment within 30 days from date. The tone of the market is very strong and prices are being rigidly held. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| Jobbers, carload lots | $1.75 | $2.05 |
| Retailers, carload lots | 1.80 | 2.10 |
| Retailers, less than carload lots | 1.90 | 2.20 |

**Smooth Fence Wire.**—There is no change in demand, which continues heavy, owing to favorable weather and the anticipated advance in price. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carloads | $1.45 |
| Retailers, carloads | 1.50 |

The above prices are for base numbers 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

| | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | Base. | $0.05 | .10 | .15 | .25 | .35 | .45 | .55 |
| Galvanized | $0.30 | .35 | .40 | .45 | .55 | .65 | 1.05 | 1.15 |

*Chicago, by Telegraph.*—Business is still active and prices are held firm, except in strongly competitive territories, on the basis of $1.45, Pittsburgh, which is equivalent to $1.60, Chicago, for Annealed Wire and $1.90 for Galvanized in car lots to jobbers or to large retailers who are buyers of car lots.

*Pittsburgh.*—Demand for Fence Wire continues extraordinarily heavy for this season of the year, due to the expected advance in prices and the continued mild weather. Efforts of jobbers to contract ahead for three or four months are futile, as the mills will book orders only for shipment within 30 days from date of contract. Quotations are as follows, f. o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carloads | $1.45 |
| Retailers, carloads | 1.50 |

**Rope.**—While demand has shown somewhat of a falling off the higher prices of Hemp have caused the market to stiffen, and some manufacturers are asking an advance on recent quotations, as follows, for 7-16 inch diameter and larger: Pure Manila, 11¾ to 12 cents; mixed grades, 9½ to 10½ cents, according to quality; Pure Sisal, 8½ to 9 cents, and Mixed Sisal, 7¼ to 7½ cents per pound.

**Woven Wire Fencing.**—The demand for Woven Wire Fencing has during the fall been exceptionally good, and most of the manufacturers in this line are fully occupied and have orders to keep their factories going for some time. Competition between them has been very active and relatively low prices have been developed, especially as compared with the price of the Wire of which the fence is composed. Some of the manufacturers who draw their supplies of Wire from the leading interest in this line find competition rather difficult on account of the narrow margin between the Wire and the finished product. The purchases of the trade have been influenced somewhat by the low prices ruling, and it is not unlikely that some of the Fencing bought has gone into warehouses in anticipation of the possibility of higher prices before long. A canvass of the Woven Wire Fence situation among Western producers reveals the fact that there is a steady growth in demand for Woven Fence, which for a time threatened to displace the Barbed Wire Fence. However, the demand that has developed for combination Fence, in which top and bottom Wires are barbed, is tending to save the day for the Barbed Wire manufacturer. As a general thing the demand for Field Fencing has been good, some manufacturers claiming that it is more than double that of last year, but that prevailing prices do not give even a fair margin of profit. Some complaint is made of inability to secure Wire promptly, but as a general thing makers of Fencing who buy their Wire report that the Wire mills are able to fill their orders promptly and are eager for business. A factor in the Fencing business is the very dry condition of the soil, which makes post setting laborious, and another delaying influence is the fact that farmers in the corn belt are so overwhelmed with the labor of caring for the corn crop that they have no time to think about Fencing, much less to string it. The good business of the past summer and the present activity in Fencing is due not only to the prosperity of the former, but also to the fact that a great deal of Fencing was destroyed by the heavy snows of last winter, and that the extremely heavy and long continued rain falls that followed the breaking up of the frost prevented even the usual amount of Fencing last spring. The fall trade, therefore, is augmented by business that should normally have been booked last spring.

**Window Glass.**—The minimum price established by the Manufacturers' and Jobbers' Window Glass Association, to which reference was made in our columns last week, is 90 and 20 and 2½ per cent. discount up to and including the first three brackets; above the third bracket the price is 90 and 10 and 2½ per cent discount from the manufacturers' list of January 1, 1901. These prices are subject to revision whenever in the judgment of the Executive Committee a reduction or advance is deemed advisable. It is understood that some manufacturers are now asking and, in some cases, obtaining an advance of 5 per cent. on these prices. The new association has opened offices in the Westinghouse Building at Pittsburgh, Pa. Local jobbers are quoting 90 and 15 per cent. discount for the first two brackets and 90 and 5 per cent. discount for sizes above, from the jobbers' list of October 1, 1903. Business at this point is reported as quiet. According to press reports, the American Window Glass Company has refused to join the Manufacturers' and Jobbers' Window Glass Association in an agreement to sell only to jobbers.

**Linseed Oil.**—The market is stronger on State and Western Raw, and it is reported that crushers are not willing to accept orders for carloads at 38 cents. Dealers are not ordering quite as freely as they were two weeks ago, but the demand for small lots is steady. The usual large buyers are confining their orders to immediate requirements. City Raw remains unchanged in price. Quotations are as follows: State and Western Raw in carload lots, 39 cents; in five-barrel lots, 40 cents. City Raw, in lots of five barrels or more, 41 cents; in less than five barrels, 42 cents per gallon.

**Spirits Turpentine.**—Demand at this point is confined to covering immediate wants, and is consequently light. It is understood that the prices given below might be shaded ¼ cent per gallon in some instances. The general tone of the market is the same as last week. Quotations in New York, according to quantity, are as follows: Oil barrels, 54 to 54½ cents; machine made barrels, 54½ to 55 cents per gallon.

---

THE BASSETT & ECHLIN COMPANY, Janesville, Wis., has been incorporated, with a capital of $50,000, to conduct the wholesale business in Saddlery Hardware, Horse Clothing and Robes, and manufacture of Harness.

---

LEON BARRITT, the well-known cartoonist, whose cartoon on the catalogue house question in our issue of May 19 was so much enjoyed by the trade, has compiled a book entitled "How to Draw," which will be published by Harper & Bros. of New York City on November 17.

## THE GRAHAM NUT COMPANY.

THE GRAHAM NUT COMPANY of Pittsburgh, whose former plant was located on South avenue, Allegheny, Pa., is now occupying its new and larger works on Neville Island, about 5 miles below Pittsburgh, on the Ohio River. The main building is 85 x 225 feet and contains 20 furnaces for heating the iron, natural gas and coal being used for fuel. This building also contains 35 Bolt and Nut making machines, all of which are driven by engines furnished by Mackintosh, Hemphill & Co., Pittsburgh. A 300 horse-power boiler furnished by the Pearson Mfg. Company, Allegheny, Pa., has been installed. This main building also contains the blacksmith shop, packing and shipping rooms. A smaller building adjoining, 30 x 225 feet, is used for cutting, threading and tapping Nuts and Bolts and for finishing material for shipment. This building is equipped with 20 cutting and threading machines and a large amount of automatic Nut tapping machinery furnished by the Acme Machinery Company, Cleveland, Ohio. The water supply is furnished by a well on the property, the water being pumped by a Boyts, Porter & Co. pump, having a capacity of 300 gallons per minute, to a tank with 10,000 gallons capacity, from where it is distributed throughout the works.

The company has 8 acres of ground and contemplates the erection of several other manufacturing buildings and will soon commence work on a warehouse and office building, plans for which have been made. The plant has direct switching connection with the Pittsburgh, Chartiers & Youghiogheny Railroad, which gives it shipping facilities over the Vanderbilt and Pennsylvania systems. The main office of the Graham Nut Company is now located at its new large warehouse on West Carson street, Pittsburgh. This warehouse is a five-story brick structure, 40 x 120 feet, having a carrying capacity of 1,600,000 pounds per floor. The building was erected by the Nicola Building Company, Pittsburgh, and is equipped with an electric elevator furnished by Marshall Brothers, Pittsburgh, the building being electrically lighted throughout. In this warehouse are carried very large stocks of Hot Pressed Nuts, Cold Punched Nuts, Machine and Carriage Bolts, Coach and Lag Screws, Cap and Set Screws, Wrought and Cast Iron Washers, Wrought Iron Turnbuckles and Semifinished and Finished Case Hardened Nuts. This warehouse has a switch connecting it with the Pittsburgh, Cincinnati, Chicago & St. Louis Railway. Albert Graham is president, Harry C. Graham, treasurer and manager of works, and Charles J. Graham, secretary.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations &c., relating to general lines of goods.*

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses and are referred to the manufacturers:*

FROM THE DORSEY-ROBINSON COMPANY, Fresno, Cal., which has lately moved into a large new store and has added Hardware to its former lines.

FROM THE S. J. THOMAS COMPANY, Gainesville, Fla., which has been incorporated with a capital of $50,000. The new company has succeeded S. J. Thomas and the Thomas Hardware & Seed Company, and will conduct a wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Paints, Sporting Goods and Mill and Mining Supplies.

FROM E. & G. BUEHRIG & Co., Minier, Ill., who have lately purchased the Hardware and Furniture business of J. M. Hart, who retires after 35 years' connection with business affairs in Minier.

FROM THE CONNECTICUT HARDWARE & PAINT COMPANY, New Haven, Conn., whose store was almost entirely destroyed by fire on the 16th ult. The company has opened temporary quarters and will resume business.

FROM GOODLIN & Co., Bergholz, Ohio, who have recently opened up in the retail line, and desire catalogues relative to general Hardware, Farm Wagons, Stoves, Paints, &c.

FROM E. M. HERRICKS, Ames, O. T., who has bought the Hardware and Furniture business formerly conducted by D. C. Farnsworth. Mr. Henricks will enlarge the building and stock.

FROM BRACY BROS. HARDWARE COMPANY, Little Rock, Ark., which has purchased the wholesale and retail business of Duley-Mons Arms Company.

FROM J. SEAMAN HARDWARE COMPANY, Greenville, Ill., which was burned out completely a few days since, with the exception of the Buggy line, which was in a separate warehouse.

FROM A. E. JAMES & SONS, Montezuma, Iowa, successors to Easter & James in the general Hardware business.

FROM BOB SMITH HARDWARE COMPANY, Ronceverte, W. Va., which has been incorporated with a capital of $20,000 and succeeds Smith-Simms Hardware Company in the wholesale and retail business.

FROM JOHNSON, HUNT & Co., Delta, Col., who have succeeded Ambrose Bros. & Hunt in Hardware, Stoves, Tinware and furniture.

FROM OLD DOMINION HARDWARE COMPANY, South Boston, Halifax County, Va., incorporated with a capital of $5000, to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Paints, Agricultural Implements, Sporting Goods, &c.

FROM CENTRAL MERCANTILE COMPANY, Enid, O. T., which on January 1 will begin operating an exclusively wholesale Hardware, Sporting Goods and grocery business in connection with its former retail store.

FROM CAMPBELL-HUTCHESON COMPANY, Roff, Ind. Ter., incorporated with a capital of $10,000, to succeed Roff Hardware Company in the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Implements, Wagons, Buggies, &c.

FROM GEO. D. HOPE LUMBER COMPANY, Kansas City, Mo., which has succeeded J. H. Green in the Hardware and Paint business.

FROM MORRIS & LONGFELLOW, Bradford, Pa., who have lately embarked in business as retailers of Hardware, Stoves and Tinware, Agricultural Implements, Paints, &c.

FROM SYLVESTER LEEDS COMPANY, Atlantic City, N. J., capitalized at $20,000, which has succeeded Sylvester Leeds in the Hardware, Stove, Paint and House Furnishing business.

FROM MANVILLE & CARRUTHERS, Ulysses, Neb., successors to E. B. Zimmerman in the Hardware, Stove, Paint and Sporting Goods business.

FROM W. A. CRAIG, Keosauqua, Iowa, who has succeeded Casner & Pettitt in the Hardware, Stove, Tinware and Plumbing business.

FROM FULLER-COOK HARDWARE COMPANY, Houston, Texas, successor to J. S. Dunlay Hardware Company in Hardware, Stoves, Sporting Goods, Implements, House Furnishings, &c. The company will make a specialty of Sporting Goods, and particularly desires catalogues and printed matter relative to this line.

W. H. Cramer has disposed of his Hardware business at Prescott, Iowa, to J. M. Jackson, who has removed the stock to Lorimor.

# THE CATALOGUE HOUSE QUESTION.

## THE LATEST DEVELOPMENT OF THE CATALOGUE HOUSE QUESTION.

AMONG the manufacturers who, in considering the question in all its bearings, decided that it was inadvisable for them to sell catalogue houses is the Stanley Rule & Level Company, New Britain, Conn., whose goods have a prominent place among the Hardware articles sold by these houses. The previous efforts of the company had resulted in inducing the catalogue houses to advance their quotations considerably; but with a view to meeting to the fullest extent the wishes and interests of the trade the company recently withdrew quotations and advised these mail order distributers of its decision not to sell them. Since that time one of the leading catalogue houses has issued a circular announcing materially reduced prices on the goods of this company and of another manufacturer who had taken the same position. In this way prices are named at which it is quite impossible for retail merchants to sell the goods at any profit and competition on the articles in question is made exceedingly difficult. This development in the direction of a contest involving lower prices is on many accounts to be regretted and the whole situation is rendered more complicated and difficult.

## THE NEW YORK MEETING OF THE JOINT COMMITTEE.

THURSDAY, Friday and Saturday of last week were devoted to a meeting between the manufacturers and the Joint Committee on the catalogue house question, with results which it is believed can be regarded by all interests as eminently satisfactory. It is an indication of the spirit in which the Joint Committee take hold of the problem which commands their attention that every member of the committee was present with the exception of R. M. Dudley of Nashville, who was, greatly to the regret of all, both for his absence and its cause, detained by illness in his family. Many manufacturers supposed to be more or less closely related to the catalogue house business appeared by invitation before the committee, who were desirous of making themselves fully acquainted with all aspects of the subject. Among these manufacturers there was substantial agreement that the catalogue house competition is greatly to be deplored and that it should be discouraged in any legitimate manner. Some of them, including leading houses, expressed their determination not to sell catalogue houses, thus taking their place with others who had previously reached the same conclusion. No effort, we are assured, was made by the committee to constrain manufacturers to take this position, and some who considered that it would be better, all things taken into account, to endeavor to persuade these houses to quote their goods at prices which would give the trade no ground for complaint, indicated that it was their purpose to use their influence to this end. Some of them, indeed, had already taken measures to accomplish this. The exchange of views between manufacturers and the commitee was frank and informal, and there can be little doubt that the committee were, as a result of the conferences, able to appreciate the manufacturers' view of the whole situation better than ever before. The manufacturers, too, some of whom possibly approached the committee with something like apprehension, were undoubtedly relieved to find that nothing extreme was suggested or contemplated, and that a basis for united action could be found in efforts in which all could work together harmoniously, in the hope that some at least of the evils of the system could be diminished and its further extension at least restricted. The report of the committee which will be presented to the National Hardware Association at Atlantic City will be awaited with interest as well as the action which may there be taken in connection with the matter in hand.

## SOME LETTERS FROM MERCHANTS ON CATALOGUE HOUSE QUESTION.

### NOT AFRAID OF THE CATALOGUE HOUSE.

*From a Wisconsin Merchant:* My policy is to sell close and as much for cash as possible, carry a large variety, offer bargains and advertise. Most of the low prices quoted by catalogue houses are on leaders, and the difference is made up on such goods as the consumer is not posted on as to prices. I find that I can sell as low as the catalogue house, and even lower in some cases.

### CATALOGUE HOUSE PATRONS' CREDIT NOT GOOD.

*From an Indiana House:* We are not very much troubled with catalogue houses. A few people in our vicinity patronize them, but they are getting "bit" very hard of late on goods received, especially on Harness and Enameled Goods, also on Blacksmiths' Supplies. Sometimes they want us to exchange large for smaller sizes of Wood Screws, or *vice versa*. It must take considerable "gall" to ask this favor of us, when we have information that they sent away for the goods. The credit of most of those who trade with the catalogue houses is not very good in our town. However, we "josh" them about getting "touched" in a pleasant way, and in four out of five cases we win them.

### TAKE AWAY THEIR CREDIT.

*From an Oklahoma House:* There has been much said in regard to the catalogue question. I believe if the retail merchants would organize by States and Territories, also by counties, a merchants' protective association, each merchant signing an ironclad contract not to extend credit to any one dealing with catalogue houses, and give notice through local papers to that effect, so that all may understand, something might be accomplished. We have customers who have owed us more than a year and they deal with catalogue houses, sending their money in advance for goods they never saw. The merchants could soon obtain a list of every catalogue house customer, who, deprived of the privilege of credit at home, would soon quit sending away for goods.

### JOBBING HOUSE GIVES A REBATE.

*From an Illinois Merchant:* On quite a number of goods quoted by catalogue houses the prices are as low as we buy them, and they are thus very troublesome. Only a few days ago we purchased a 96-pound Farm Bell from a St. Louis jobber at $2.30, f.o.b. St. Louis. The catalogue house price on this Bell is $2.36. We called the salesman's attention to this when we paid the invoice and he gave us a rebate of 15 cents on the Bell; but, of course, as our customer knew the catalogue house price we could not make a profit on the Bell.

## DEATH OF DAVID D. BATCHELDER.

DAVID D. BATCHELDER, president of the United States Steel Lock Company, Clinton, Iowa, died Wednesday, November 1. Mr. Batchelder was also president of the First National Bank and the Lyons Savings Bank, both of Lyons, Iowa. Mr. Batchelder was born in Peacham, Vt., in 1825. He went West to Peoria, Ill., in 1852, where he engaged in coal mining operations, and three years later removed to Osage, Iowa, where he owned and operated a saw mill. From that start he built up a large lumber business, with retail yards all over western Iowa and with extensive timber lands. In 1895 he established the United States Steel Lock Company, which employs 125 men. Mr. Batchelder was one of the most prominent and wealthy men of eastern Iowa.

# THE ATLANTIC CITY CONVENTIONS

## AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION.

## NATIONAL HARDWARE ASSOCIATION.

THE delegates to the National Hardware Association and the American Hardware Manufacturers' Association were early in coming to Atlantic City, a good proportion of them being in attendance on Tuesday, when both the Rudolf and the St. Charles found their capacity taxed to the utmost. Among the notable arrivals was that of the special train from Chicago, bringing nearly 100 delegates. In the lobbies during the evening and on Wednesday morning prior to the opening of the convention many of the subjects engaging the attention of the trade were informally discussed. In view of their importance and the large and representative attendance the impression prevailed that the approaching convention would be of special interest and significance.

### The Opening Session

was held on Wednesday morning in the Rudolf, and was under the auspices of the Jobbers' Association, but manufacturers and all who desired to attend were invited. In connection with the opening of the convention brief addresses were made by Samuel A. Bigelow, president of the National Hardware Association; Hon. Franklin P. Stoy, Mayor of Atlantic City; R. S. Woodruff, the recently elected Lieutenant-Governor of Connecticut; J. C. Birge, president of the American Hardware Manufacturers' Association; W. P. Bogardus, and M. L. Corey, president and secretary, respectively, of the National Retail Hardware Dealers' Association, and also by representatives of the Canadian Wholesale Hardware Association.

In speaking as representative of Canada Mr. Hardy, the secretary of their association, presented some interesting statistics in relation to the trade between the two countries, emphasizing the point that Canada is the third best customer of the United States.

These addresses were followed by the roll call and the regular order of formal business, including the address of President Bigelow and the report of Secretary-Treasurer Fernley, which are given below. The remainder of the session was devoted to a collocution on the "Proper Avenues for the Distribution of Hardware and Kindred Lines." This was participated in by Geo. E. Corbin, whose address is given in another column; W. P. Bogardus, Samuel E. Winslow and Geo. M. Reuter, Jr.

### PRESIDENT BIGELOW'S ANNUAL ADDRESS.

It seems hardly possible that one year has passed since we held our ninth annual convention in Atlantic City, and that we find ourselves back again to enjoy its hospitality and to continue the association work which has produced such good results the past year.

Here by the ocean and its invigorating air, away from the cities and their alluring attractions, with a meeting place where the members can mingle freely together, lasting friendships have been formed and a greater interest in our meetings has been displayed.

GATHERING IN GREATER NUMBERS THAN EVER BEFORE

for your tenth annual convention, you have come that your officers may render account of their stewardship, and to make plans for future work. Subjects of grave importance will be discussed at your meetings which will require careful, sober and thoughtful consideration. Your decisions should be based on the broadest principles of justice and fairness.

FLOURISHING CONDITION.

When I accepted the presidency with which you honored me one year ago I promised I would discharge its duties to the best of my ability. Guided by your able and experienced Executive Committee, and with the assistance of your indefatigable secretary and the unanimous support of the members, I have reason to congratulate the association on its present flourishing condition.

Your executive officers have labored diligently on the lines laid down by you at your last meeting. Many results have been accomplished the past year which will be explained to you in the report of your secretary-treasurer and those of your various committees. Their suggestions for future work should receive your careful consideration. These reports will make manifest to you the ever increasing influence of your association and its invaluable aid to its members and to the Hardware trade in general, not excepting the manufacturers.

Policies adopted at the organization of this association in 1894, and continued through successive administrations since that time by your able, conscientious and conservative officers, have made the National Hardware Association of the United States the model association of America. May you never deviate from the policy of honesty and fair dealing, rendering justice to all. This policy has been your mainstay in the past. Let us hope it will ever remain so.

INDUSTRIAL EXPANSION.

Last year your worthy president likened the feeling of doubt and uncertainty in the business world to the cry of the prophet of old, "Watchman, what of the night?"

That cry has now been answered, and to-day we are on the threshold of the second great outburst of American industrial expansion.

The political situation created no apprehension in the minds of business men. The people realized there were two good men as candidates, and they had no need to worry about the result.

The South has enjoyed two years of prosperity; has been made rich by 10-cent cotton, and the promised increased production the present year will add still greater riches. The construction of the Panama Canal and other great public improvements will stimulate business in that section. The West has enjoyed bountiful crops, and the high prices will more than compensate for any shortage should it develop in the wheat crop.

Money conditions throughout the country are good. Country banks were never in so good condition. Foreign capital is seeking investment here, and an immense tide of immigration promises a large consumptive demand.

The tonnage of the railroads has not fallen off. Collections are good and confidence takes the place of caution which prevailed only a short time ago.

CONSERVATISM.

This association, born in a season of adversity, has continued through a period of the greatest inflation and expansion this country ever knew. It has been safely guided during great depressions in the stock market and harassing troubles, and now on the eve of returning prosperity it stands in its strength and vigor to advocate that conservatism among its members and manufacturers that has influenced a stability in prices, in the face of both inflation and depression, to the profit and well-being of the whole Hardware trade.

IN MEMORIAM.

There are many who have answered to our annual roll call who have passed on before us during the past year.

December 10, 1903, CHARLES H. KELLOGG of Boetticher, Kellogg & Co., Evansville, Ind. Mr. Kellogg was vice-president of his company, a prominent and respected citizen of Evansville, and had the confidence of all with whom he came in contact.

December 21, 1903, THOMAS C. NESBITT of Newlin-Knight Hardware Company, Philadelphia, Pa. For many years his wonderful determination and ambition grappled with disease, but patiently and resignedly he met the dread summons with great hope of future happiness.

January 23, 1904, EDGAR UNDERHILL of Underhill, Clinch & Co., New York City. Removed from us while still in the vigor of manhood and from a large circle of warm hearted friends who will ever cherish his memory.

February, 1904, JAMES T. CUNNINGHAM of Cunningham Hardware Company, Mobile, Ala. A genial and companionable man, giving great promise of future usefulness to the business world. What promised to be a brilliant career here was, for some Providential reason, terminated.

April 16, 1904, RUSSELL SARGENT of Sargent & Co., New York City. A noble son of honored ancestors, whose pure life had already made its impress on those with whom he came in contact. His memory will ever be cherished.

May 7, 1904, CLARKE MERCHANT of Merchant & Co., Philadelphia, Pa. A man whose keynote was honor, who entered business life after having been lieutenant-commander in the United States Navy, and who has bequeathed to his business associates an honored name which is known throughout the entire country.

May 22, 1904, CHARLES W. POTTS of W. F. Potts & Co., Philadelphia, Pa. A genial and warm hearted friend and one whose greatest delight was to extend a helping hand to those who were in distress.

June 1, 1904, JAMES R. SMITH of Weed & Co., Buffalo, N. Y. His business partner of him said: "In his death Buffalo has lost a business man of rare capability, a citizen of spotless integrity and a philanthropist of undoubted generosity."

June 24, 1904, CHARLES SMITH MERSICK of C. S. Mersick & Co., New Haven, Conn. A man active in public affairs, both commercial and political, who also served his church with fidelity and who did much to uphold the commercial integrity of his country.

October 22, 1904, CHAS. F. SCHMIDT of Charles F. Schmidt Hardware Company, Burlington, Iowa. From the rank of traveling salesman he established a business and became the head of it, and at the age of 71 years passed to his reward.

To the business associates and the bereaved families of these our deceased members we extend our most heartfelt sympathy.

I wish to thank the officers and members for the universal courtesy and support I have received, and to assure you that as

a member of the Advisory Committee the coming year I shall continue to do my part to support and maintain the principles advocated by the National Hardware Association.

## SECRETARY-TREASURER FERNLEY'S REPORT.

For the tenth time we are confronted with the difficulties connected with the rendering of a report to the members of the National Hardware Association of the work which we have done or attempted to do since our last annual meeting. It is very essential that we at least create the impression that an earnest effort is being made to meet your views as to what should be done, in order that the present incumbent of the position of secretary-treasurer of this association should retain his position.

At the last convention of this association the secretary was instructed to execute certain policies, which after free and full discussion had been adopted. These subjects will be duly reported upon from time to time during our executive sessions.

During the year we have visited a very large number of the members of our association, discussing with them matters which were germane to the work. We have covered in this way 27 States, and will not attempt to tell you how many miles we have traveled. We only desire to report we have every time gotten back to the base of operations.

### SECTIONAL ASSOCIATIONS.

We have visited, whenever possible, the sectional and State wholesale Hardware associations. We have found these associations in most excellent condition, and we recommend to the jobbers in their respective sections the following: Southern Hardware Jobbers' Association, Pacific Coast Hardware and Metal Association, Texas Hardware Jobbers' Association, New York State Hardware Jobbers' Association, New England Hardware and Iron Association, and the youngest of these sectional associations, the North Pacific Hardware Jobbers' Association.

These organizations are all obtaining results from their efforts which amply repay those who are supporting them.

### LOCAL ASSOCIATIONS.

We are again compelled to report there is room for great improvement among the members of our association and others along the line of attempting to obtain direct advantages from a close and frequent contact with immediate competitors. It is our opinion that in every city where there are two or more jobbing houses an association should be sustained and frequent meetings for the interchange of views should be held.

### RETAIL ASSOCIATIONS.

We are pleased to report that these organizations are gaining in numbers and influence. Since our last convention we have come in contact with many of the officers of these associations, and we find them to be men of ability and thoroughly earnest in their efforts to benefit the conditions which surround the retail Hardware business.

We sincerely hope that the day is not far distant when every retail Hardware merchant of the United States will be connected with his State association, and in this way not only protect his own interests, but through the National Retail Hardware Dealers' Association of the United States, benefit the general Hardware interests of the country.

### PREMIUM FOR ANTICIPATED PAYMENT.

The attitude of our association on this subject is too well known to need any further explanation. Indeed, at the present time almost every manufacturer of Hardware and kindred lines has conceded that the buyer, who places the seller in possession of funds within ten days of the date of shipment of goods, is entitled to this premium. In fact, it has become a trade custom.

We hear very little complaint from manufacturers of violation of the terms; truly, if the premium is accepted the purchasers should live up to the conditions governing the offer.

For several years we have been urging upon the manufacturers of tin plate the importance of adopting the 2 per cent. for cash within ten days. This is the first time we have been able to report success. The thanks of the trade are due to the American Sheet & Tin Plate Company for having met our views, and I think our membership is prepared to thank in advance the very few concerns who are still holding out for terms other than mentioned, but who in all probability will within the next few weeks yield to our requests.

### OUR RELATIONS WITH MANUFACTURERS.

During the past year, we believe, the assistance which our association can render the manufacturers of the country has been recognized to a greater extent than in previous years. The principle that the jobber is the proper distributer of goods and that he is the most economical agent is no longer a subject of debate, so that to-day we find manufacturers coming to our association and asking what selling policy they can adopt that will be most pleasing to those upon whom they depend for distribution of their product.

In order to be fair to the legitimate retailers of the country as well as the jobbers of the country, manufacturers recognize that it is essential for them to classify by name those who are entitled to rank as jobbers. The value of the experience of our association is recognized to such an extent that a very large part of the time of the secretary-treasurer of this association is devoted to making up of these classified lists. Indeed, to such an extent do the manufacturers appreciate the services which can be rendered them that offers of remuneration are frequently made, which, of course, are always declined, as our association is on record as inviting the manufacturers to seek our co-operation.

### MEMBERSHIP OF THE ASSOCIATION.

When a report of our Membership Committee is received it will develop that during the year quite a number of legitimate jobbers have united with our association, so that numerically we are stronger than at any time in our history, and would further add that those admitted are such as will add strength to the organization.

### FINANCIAL CONDITION.

It is very pleasing to report that we have in our treasury at the present time, after all bills are paid, a balance of almost $5000, so that we are in a very healthy financial condition.

### CATALOGUE HOUSE COMPETITION.

In previous years our report has always alluded to this subject. The matter, however, is now in the hands of a special committee, which committee is part of the Wholesale and Retail Hardware Joint Committee, an organization of retailers and jobbers, which has been vigorously handling the subject during the past six months, and we are certain that the report which our Catalogue House Committee will make will be pleasing to the members of this association. We would only add that the agitation has brought the organized retailers and this association into a close personal contact, so that to-day the jobber and retailer are united, each convinced that the interests of one cannot suffer without the other being affected.

### LOYALTY OF MEMBERS.

The members of our association during the past year have evinced interest in the work of the association to a marked degree. Correspondence from our office has been given prompt attention. We know of no organization, the members of which display a warmer interest in the work. The Executive Committee of the association have freely given of their time in instructing and directing the footsteps of the secretary-treasurer.

The president of the association has kept a firm hand on the organization in general and the secretary-treasurer in particular. We do not want to publicly unfold our sorrows or tell anything of the details of the sadness of our life during the past year caused by his strenuous guiding hand. The high regard in which he is held by the members of the National Hardware Association would probably cause a withholding of sympathy with the sufferer. We can only add that notwithstanding all, we are still able to tip the scales at the usual weight.

## WHAT ARE THE PROPER AVENUES FOR THE DISTRIBUTION OF HARDWARE AND KINDRED LINES?

BY GEO. W. CORBIN, NEW BRITAIN, CONN.

Probably no question which has been brought for discussion before the many meetings of this association has been more considered with less possibility of satisfactory settlement to all parties interested than the question: How shall goods be marketed? Other trade questions have been treated and acted upon in a harmonious spirit after repeated discussions by both jobbers and manufacturers, and practically a uniformity of action has resulted, such action being necessary in order to continue business with a better understanding between manufacturer and distributer.

Questions such as syndicate buying, selling retailers, selling catalogue houses, cash discounts and other less important subjects have been handled in a broad and liberal manner which has been advantageous to all interested. It was for the purpose of bettering their respective conditions that the jobbers saw fit to come together, and in so doing the manufacturers were placed in such a position that nothing but benefit could accrue by their co-operating with that association for the mutual benefit of both jobber and manufacturer.

### SUPPLYING THE CONSUMERS' WANTS.

The manufacturer of to-day sums up the matter by asking questions similar to these: How can goods get to consumers' hands the cheapest way? How can the consumer be supplied at the least expense? What is the most profitable way to place goods in the consumer's hands?

We all recognize it is the consumer who creates the demand. It is to supply his wants that goods are made and stock carried by those whose duty it is to supply such demands.

### COMPLICATIONS OF THE TRADE.

From the manufacturer's standpoint there are those whose entire output, provided it be a limited line of goods, can be marketed through the jobber, but the larger manufacturer, whose assortments are unlimited, is compelled by the very nature of his goods to sell to jobber, retailer, consumer or any one for whom the line is attractive or for whom the goods are especially made. No jobber sells or will carry in stock the complete lines of some manufacturers. There are many lines of goods which jobbers will not handle. It is difficult to interest jobbers in many new lines of goods for which the jobber must create a demand; hence manufacturers are compelled to create the demand through retailer or consumer. There are lines of goods made by Hardware manufacturers and handled by Hardware jobbers which are sold by jobbers interested in lines foreign to Hardware. There are manufacturers who are jobbers and jobbers who are manufacturers. There are jobbers who manufacture and sell to retailers as well as to consumers.

The foregoing illustrates the trade complications in a line that daily grows more extensive, a line that on account of details and endless variety should entitle the dealers to a greater apparent profit than that of any other business, but it must be admitted from all points of view that nearly every other business is more remunerative than Hardware.

More attention has been recently given by manufacturer and jobber to houses whose business is assuming large proportions, who have created a demand for all lines of goods by catering for business direct from consumers with attractive goods as well as attractive prices, and who retail by means of catalogues. We

also have another class of distributers on practically the same lines, but who solicit and receive business direct from the retail trade and who are comparatively free from the expense of selling their goods and are also mail order catalogue houses. There are the very few jobbers who sell to retail trade exclusively. Then there are the jobbers who are also retailers and are in a position to sell every class of trade from the manufacturer to the consumer, including what are known as catalogue houses. Then there are the syndicate buyers whose policy has enabled jobbers, retailers, manufacturers and consumers, to buy through them at one price for all classes of trade. Associations of retailers with practically the same business ideas as syndicate buyers are coming into existence, whose combined purchases make it an object for manufacturers to treat them as jobbers, with the result that in every instance where an aggregate of business appears the question of price is not for the class of trade, but for the volume instead.

IT IS IMPOSSIBLE FOR MANUFACTURERS TO AGREE UPON ANY PRICE SYSTEM

to meet all the complicated systems of trade demoralization. It is possible, however, for manufacturers, jobbers and retailers to agree upon uniform policies which must be adopted and which would to a great extent overcome the objections raised by the trade on account of goods being distributed through channels not recognized by the various trade associations as legitimate. The prime factor in the distribution of Hardware is the manufacturer. Every manufacturer would gladly welcome a movement whereby the jobber would take his complete line and dispose of his entire output. This, however, is an impossibility.

In the face of these facts we are confronted with the question: What are the proper avenues for the distribution of Hardware and kindred lines? In the distribution of goods the logical and proper avenue would be for the retailer to supply his wants from the jobber, the jobber from the manufacturer, and the manufacturer to sell only to the jobber.

THE MANUFACTURER SHOULD SO REGULATE AND ADJUST HIS POLICY

that when conditions arise caused by new methods, irregular methods or a doubtful departure from natural methods of doing business he can justly and equitably both to himself and his customer retain the confidence and respect of those who have contributed toward building up his business, and upon whom his future business and profits depend, and at the same time feel that in marketing Hardware through recognized and proper Hardware channels he is building correctly for his own future.

# BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, 10 NORFOLK ST., LONDON, W. C., November 5, 1904.

THERE is not much new to report this week. Trade is as I have previously indicated. A heavy weight of Locks, chiefly of the better quality, is being turned out, and the Edge Tool makers are also well employed. Good orders on export account have been received for Galvanized Roofing. The demand for fast cutting special tool steel is happily well maintained, and everything points to the building up of a steady trade in this comparative novelty by many firms. There are still many American tools used in our engineering works and shipbuilding yards. With every increase in the demand for British machine tools the manufacturers of high speed tool steel will directly benefit. This is a branch of industry where the efficiency of the product is directly proportional to its high quality. "Something cheaper" will not do at all.

Another stiff advance in ivory prices has been realized at the Antwerp sales, which began on Wednesday. A further revision of Sheffield cutters' price-lists in an upward direction is now inevitable. As much as £10 per hundredweight increase on prices at the London quarterly sales only last week has been easily obtained at the Belgian port. Cutlery manufacturers will have to anticipate at the very least a 10 per cent. advance on the current lists for hafting ivory, and this will mean, of course, that the price of Ivory Handled Cutlery will have to go up in proportion. The natural result will be a lessened demand from the public, who, except in regard to the best qualities, which may always be relied on to maintain their market, will give the preference more and more to one or other of the excellent substitutes for ivory now obtainable. The secret of this advance in ivory prices is the lessened supply, for during the last seven years there has been a gradual and rarely interrupted diminution in the quantity of ivory landed at European ports, and meanwhile the demand from both European countries and America has as steadily increased.

## HUNTING WINDOW DISPLAY.

THE illustration herewith gives some idea of an attractive hunting window display recently made by W. W. Luebkeman, who is a dealer in Hardware, Mill Supplies, Paints, Stoves, Sporting Goods, &c., at Eau Claire, Wis. Two prairie chickens and some quail were placed in one corner of the window, also two decoy ducks on a mirror representing a lake, but these are not

*Hunting Window Display.*

distinctly reproduced in the picture. The exhibit attracted a great deal of attention, and was the subject of much favorable comment. Mr. Luebkeman had a somewhat similar window last year, and as a result of the advertising which he secured through it sold over 50,000 Loaded Shells and about 50 Guns, in addition to other hunting accessories.

## BROWN-HURLEY HARDWARE COMPANY'S CATALOGUE.

BROWN-HURLEY HARDWARE COMPANY, Des Moines, Iowa, has just issued a handsome, complete and well arranged catalogue, bound in morocco with Russia leather corners. It contains 1178 pages, with a number of inserts, and is printed on heavy paper. The goods shown are grouped into general classifications, pages 1 to 292 being devoted to Builders' Hardware, Cabinet Hardware and Paper Hangers' and Painters' Tools and Supplies; pages 293 to 424, Carpenters', Mechanics', Masons' and Blacksmiths' Tools; pages 425 to 622, miscellaneous Hardware, including Blacksmiths', Wagon Makers', Saddlery and Carriage Hardware, Shoe Findings, Miners' and Cement Sidewalk Tools, Farming Tools, &c.; pages 622 to 862, House Furnishings, such as Refrigerators, Hollow Ware, Enameled Ware, Stoves, Ranges and Sheet Metal Workers' Tools and Supplies; pages 862 to 1007, Sterling and Silver Plated Ware, Cutlery, &c.; pages 1008 to 1079, Guns, Ammunition and Supplies; pages 1096 to 1107, Baseball and Lawn Tennis Goods; pages 1140 to 1163, Bicycles and Bicycle Sundries; pages 1164 to 1177, Sleds, Skates and Holiday Goods. A feature of the catalogue is the printing in colors of the labels on Axes, Hatchets, Farming Tools, &c., and also the very elaborate color cards inserted to illustrate Mixed Paints. The subject matter is preceded by a closely subdivided thumb index of nearly 50 pages.

# TRADE WINNING METHODS.

## THANKSGIVING ADVERTISING.

THE importance of making advertising timely and taking advantage of the great events of the year as they present themselves in due course is generally recognized. In the near future is Thanksgiving Day, and in the following advertisement an illustration is given of the manner in which this annual festival is utilized in a business way:

**A PROCLAMATION:**

WHEREAS: *In conformity with his official privilege, it has pleased His Excellency the President of the United States, the Hon. Theodore Roosevelt, to set apart Thursday, November 24th, as a day for National Thanksgiving, and*

WHEREAS: *By a feeling which custom has made a law that the turkey is the bird for the Thanksgiving offering to the household gods, and*

WHEREAS: *The essence of real Thanksgiving, abiding in the heart of him who carves the bird, depends entirely on his tools, and*

WHEREAS: *A poor old carving knife puts the carver in the saddest condition of tongue or pen;*

THEREFORE BE IT RESOLVED, *That husbands and wives, having the knowledge that the household carving-set is old, dull and forlorn, do inspect the array of carving cutlery shown by the undersigned, each with the view of adding to the Thanksgiving joys of the other, and by procuring from us a good carving set to grace their Thanksgiving table with their turkey.*

*To which we have set the hands and seals of*

**THE DUDLEY HARDWARE STORE,**
**and of**
**Johnson & Williams,**
**Its proprietors.**

The above is being used during the present week. Johnson & Williams recognize the importance of good methods in advertising, and are as a general rule changing their advertisements weekly, the care of this department of their business being in the hands of Harry A. Johnson, 1710 Flatiron Building, New York, who got up the advertisement reproduced above. We give it as illustrating a general principle to be followed in advertising and at the same time not too late for some of our subscribers to make use of in their local papers this year.

---

## A MERCHANT'S POINTERS ON THE SHOW WINDOW.

A WELL ARRANGED show window is better than an advertisement in the newspaper. First, it need not cost so much, and, second, shoppers may read the paper and sometimes the advertisement, but they are almost sure to look into a show window if it is attractively arranged.

### BETTER THAN NEWSPAPER ADVERTISING.

They may not walk right into the store and buy one of the articles displayed, although this often happens, but even if they do not your effort to interest them is not lost, for they have seen the goods, and when they are in need of anything in that line will remember where they saw them. The sight of an article often creates a desire for it. The window is the place to catch the public eye. Show your goods, create the desire, and the demand will certainly come.

### SELECT ONE MAN FOR WORK.

It is a good plan to let one person pay special attention to the dressing of the window. Let him do the planning, select the articles for the display, make the placards, and arrange the window. Give him full swing, encourage him and don't complain if he asks to spend a little money on the window. If you select the right man to look after the window the results will surprise you.

### VERSATILITY OF DISPLAY.

It is possible in a good up-to-date hardware store to make 52 displays in one year and have no two displays alike. Some goods may be used several times in doing this, and it is well that they are. The public doesn't get a chance to forget that you can supply them. It is well to have several different colors of cloth or other material to cover the window floor and sides, so that with each change of display there is a change of color.

### SEASON GOODS.

Show season goods in advance of the season. Don't wait until the goods are being called for before making a display. Better be a little too soon with your window exhibit than let the other stores get there first. Aim to lead.

### CATER TO BOTH SEXES.

Plan your changes so that goods of interest to both sexes will be constantly displayed. If you have two windows, dress one for the edification of the fair sex and the other for the strenuous type.

### DON'T BE AFRAID.

Be original, have ideas of your own. Don't be afraid to show goods because you think they are too common. They are to be sold; therefore show them.

### SIGN CARDS.

Word sign cards so that they state what you want to say in as few words as possible. They are more liable to be read if they are short and crisp.

### HELPING FOREIGNERS.

In no other business are there so many articles with the names of which the general public are not familiar. When people see the goods they can point them out and buy. This is often the case in cities where there are people who do not speak English, so cannot ask to see what they want.

---

## PRACTICAL SUGGESTIONS.

### SAWDUST AND SHAVINGS IN WINDOW DISPLAY OF TOOLS.

A HARDWAREMAN in a Western city some time since made excellent use of sawdust and shavings in a show window display of Carpenters' Tools. The floor of the window was covered with fine sawdust and good clean, curly shavings, procured from a planing mill in the vicinity without charge. The Tools exhibited were of the best quality and well polished. They were nicely arranged, the smaller ones in the foreground, with larger Tools in the center and rear. A striking display was thus contrived, "unique," as one of the local papers termed it. The Tools of themselves would not have attracted special attention, but the combination with sawdust and shavings did the work, being odd and unusual.

### MAILING LIST AND CREDITS.

An Ohio merchant, whose trade is largely with the farmers and who is a firm believer in the efficiency of printers' ink, to the intelligent use of which he attributes much of his success, has a mailing list which includes the name and post office address of every taxpayer in his county, with value of real and personal property. The list also comprises parties, customers and others, who are regarded with confidence by the merchant. Every effort is exerted to keep this list up to date and limit it to live names. This list has been used for over ten years, and in the merchant's opinion has saved him

several thousand dollars in that period, as frequently parties have visited his store and asked for credit, which was granted or refused according to his view of their responsibility as shown by the record. As a consequence his credit losses have been comparatively insignificant.

## A HARDWARE SHOP IN BANGKOK.

THE illustration herewith is a photographic reproduction of a typical retail shop on one of the many canals or streets of Bangkok, Siam, taken especially for these columns by a native correspondent. Bangkok is Siam's capital, with a population variously estimated at from 250,000 to as high as 700,000, that of Siam itself, in the absence of an accurate census, being placed at from 5,000,000 to 8,000,000. Bangkok is situated in a marshy region on the Menam River, about 20 miles from its mouth, and, as in Venice, the people are largely dependent on canals for getting about.

*A Typical Shop or Bazaar in Bangkok, Siam.*

The retail merchants in the city are almost exclusively Chinamen or Siamese women, the Siamese man being an ease loving individual who smokes, gossips and looks out particularly for his own personal comfort. On the other hand, the Siamese woman is represented as an industrious, energetic, capable individual, who if not in charge of a shop often takes a boat and with an assorted stock conducts a profitable business. A shop such as is depicted will keep in stock a few pairs of Scissors, some Nails, Screws, Wire, both brass and copper usually; a Saw or so, some Files, Hatchets, Hoes, Mattocks, Galvanized Buckets, together with such merchandise as kerosene cans, rice, lard, tea, Chinese cakes, pepper, sago flour, &c. The roof is thatched with attap, a nearly stemless palm of the tidal forests of the East Indian archipelago, its smooth leaves being from 15 to 30 feet long, very thick and strong, and extensively used for thatching.

Transportation, owing to the character of the country, is largely accomplished by the use of boats, from small skiffs, that the average European can only stay in long enough to tumble out of, to house boats, in which a Siamese family will live. Much business is done by barter, the native coming down from the interior and exchanging one form of goods for another for which there is a demand up country, without using money as a basis of exchange.

In the illustration is a Siamese woman in one of the small boats alluded to arranging for a business trip. The figure at the left is that of a man native considering the question of taking a plunge or bath right there. The attitude of the two central figures, both men, indicates nothing in strenuosity, rather intense listlessness, if the paradox is allowable. The women do most of the rowing about.

"New Road," as it is called in Bangkok, is lined with much finer shops, kept principally by Germans, French, a few English, some Armenians and Bombay or Madras natives. The merchants from Bombay and the Chinamen are said to be the most astute merchants in the East.

The real typical busy street of Bangkok is Sampeng, which is about a mile long, its extreme width not exceeding 8 feet, with closely lined shops on both sides. The shops are seldom more than 10 feet deep and 10 feet front. Occasionally a shop has a frontage of 20 to 25 feet. Sampeng resembles very much streets in Canton, China. The merchants in this retail or bazaar street are made up of Chinese, Simo-Chinese and Siamese women. All sorts of things are dealt in, from Toys, Cartridges, Lead, Shot, Fish Hooks, Bits, Braces, Saws, Files, Hatchets, some Axes, Chisels, Butts and Hinges to Cabinet Locks, partly brass, and varieties of Padlocks, many of the Yale & Towne patterns being used. One of the curious sights in a shop is a few loose Cartridges, the sale of which in many sections is prohibited. An up country man will come in and buy two or three, say, with which to push a neighbor or enemy over into eternity, either for revenge or to get his possessions. Another curious feature of the trade there is the price they will pay for a fine pair of rubber tired carriage wheels for use in connection with their jinrikisha, a small two-wheeled hooded conveyance, provided with springs and drawn by one or more men, said to have been invented by an American missionary for carrying people about. There is also a keen interest in Wire Nails, Carriage and Machine Bolts and allied Hardware.

S. K. Bergseth has sold his Hardware business in Taylor, Wis., to A. W. Tickfer, who will not, however, take possession until April 1 next.

# Retail Hardware Merchants Going Out for Business.

WE continue below the discussion by Hardware merchants of the question as to the desirability of their making efforts by personal solicitation outside the store to secure business. It will be seen that our correspondents differ somewhat in their views of the matter, though the general disposition is to favor such aggressive efforts:

### Soliciting Something in Sight.

*From an Arkansas Merchant:* I believe in going after business, provided there is something in sight; for instance, somebody getting ready to build, or to start a shop of some kind, &c., where Hardware or machinery will be needed. However, I do not think it will pay to canvass the city for Hardware. I think this is overdone now by butchers, grocers and peddlers generally, and am of the opinion that customers would not take kindly to this mode of selling Hardware.

### After a Full Test Does Not Approve Canvassing.

*From a Colorado Merchant:* I am a Hardware merchant and also an implement merchant. It has long been the custom of implement dealers to spend a good deal of time in the country each year soliciting farmers of all classes to buy machines of them. I consider it one of the poorest propositions before the business world to-day. It is being abolished quite rapidly through this part of the country, and I believe the time will come when it will be discontinued entirely. Three towns on this line of railroad, within 60 miles of here, discontinued the practice this year.

I have found, by my own experience, that when a salesman goes into the country to sell goods he has only one object in view. That is, to obtain an order by hook or crook, with no regard to the financial standing of the party from whom he is soliciting. I have spent considerable time in the field myself, going after business, and I do not indorse the system at all, principally because it causes you to place on your books many doubtful accounts which you would not do if you allowed the customers to come to your place of business. Besides it is very expensive, and I do not believe the returns obtained warrant the expense.

**Doubtful Accounts**

I have found personal letters to prospective customers in which I priced my goods, and invited the people to call at my place of business and examine the same, to be the cheapest and most effective means of advertising during 14 years' active experience.

### Hustling vs. Waiting.

*From an Arkansas House:* I think that the Hardwareman can obtain more business by going or sending some one to see the people that he can by waiting for them to come to him. The man that will get out and hustle for orders for Reapers, Mowers and all kinds of Farm Implements will get more business than the man that sits and waits for it. But I do not think that it would pay to put a man out to sell Shelf Hardware at retail, because the cost would be more than the profit.

### Canvassing Both Feasible and Necessary.

*From a Merchant in Arkansas:* It is both feasible and necessary for retail merchants to canvass their territory for trade. I have followed the practice every year for five years and I find it both profitable and agreeable, and in the face of catalogue house competition it is very effective in putting a quietus to their business.

I take some one particular line and, if possible, carry a sample. If not a sample, some important working part. This gives an opportunity to get attention from a customer, and in course of conversation you can work in points on a great many articles. I always use a good rig and have my sign and style of business painted on the rig in a prominent place, so that the news can be handed around the neighborhood that ——— was in the country such and such a day. Anything out of ordinary is news in the country. And I never forget to have a lot of circulars with cuts of my goods for distribution.

**Using a Particular Line**

Neither do I forget the children. You get a child's attention and good will and you have captured its mother; and if you get the child's mother, you generally get the head of the house; and lots of times this is done with a stick of candy or a penny. I generally buy a drink of water or a glass of milk from the little ones on the road and it is never forgotten.

**Working Through the Children**

### Do Not Think It a Good Plan.

*From a Michigan House:* We think it would not be a good plan for the retail merchants to undertake to send out traveling salesmen to work up a retail trade, for the reason it would be an undertaking that would cost the retailer a great deal of money, more so than he would realize out of the profit of his goods, and we think it would not help the business any, for if one concern begins to send out a man, another would do the same, and then all would fall in line. In our judgment, in a very short time the retail business would be slashed up in such shape that there would be very little profit left. It would also be a great schooling for the people, and no doubt in a very short time they would be better educated in prices than a great many retail clerks working in a Hardware store the year around.

**Would Educate Public in Prices**

We think it would be a great deal better to try to have the people come to the store to buy goods instead of sending the clerks out after them. You have more chance to show them the goods, and you are forming an acquaintance with your customers.

Our judgment may be wrong, but we are always anxious to do business, and if there is a way to increase it we would like to know about it.

### Outside Canvassing Mischievous.

*From a Merchant in New York State:* I have held that the place for a retail merchant is in his store, to serve customers when they come to purchase goods. When a consumer requires goods he calls on the retailer for them. In many towns trade has been disturbed by salesmen from small jobbers calling on consumers. This has compelled many retailers to have an outside man to look after their customers. This makes an additional expense, and if all the local dealers do the same there is no gain, but a constant war in prices, because the territory is small. Then, in order to keep the outside man employed, the tendency is to reach out for trade in the neighboring towns, the natural territory of other dealers, who are amply prepared to supply the demands of their trade. Inducements will often be made to the foreign trade for business, and the results are unpleasant and unprofitable and sometimes beget bad accounts.

**An Additional Expense**

When a customer comes into my store and inquires for an article I know that he wishes to buy, but when I go out to look for trade it is then a hunt for a customer, and that fact signifies to him that I am anxious to sell.

If a merchant has a special article he is warranted in sending one of his clerks to introduce it to consumers.

### Canvassing for Certain Lines.

*From a Nebraska Merchant:* Canvassing is not satisfactory either to the dealer or the farmer, except, perhaps, on certain season goods, such as Binding Twine, Cream Separators, Wire Fencing, &c. Farmers will soon get tired, and think they are being "worked" instead of benefited by their home merchants. The catalogue house publications will be consulted all the more in order to verify the impression thus formed.

As for the dealers themselves canvassing would lead to aggravated competition and price cutting if they all followed this plan, while increasing the expense of doing business.

**Personal Letters and Price Currents**

My idea is that personal letters and price currents sent out from time to time in addition to intelligent newspaper advertising are as effective as canvassing and much more dignified.

### More Aggressiveness Needed.

*From a House in Iowa:* We do not have catalogue house competition in our city, for the reason that local competition is so strong that catalogue houses are not in it, and I do not know of any one here that patronizes catalogue houses. I think the great trouble in the small towns is that the merchants are not aggressive and do not try to meet catalogue house prices. When they find a party ordering goods from catalogue houses, instead of treating him as nicely as they can they say mean things to him and give him a chilly reception. I formed this idea from conversations I had with a great many of the Hardware dealers of this State at our last convention.

**Icicles Don't Pay**

I think they are adopting the wrong plan in treating their customers in this manner. I am quite sure if I found one of our customers ordering from a catalogue house, I would make special effort to treat him as nicely as possible, and quote him prices that would hold his trade here. While there might not be much money in it for the first order or two, I would soon have him weaned away from catalogue houses so that there would be no further trouble.

While it would be rather expensive work for small deal-

ers doing business in a small town to send out personally and canvass their trade, which is largely farmers' trade, yet I believe they could write personal letters to these farmers that they know are buying from catalogue houses, saying that they would be glad to sell them goods at catalogue house prices with the freight added, and invite them to call at their store, and when they do call treat them as nicely as if they had been customers for years. If this is followed up I think in a very short time they will not be troubled with said catalogue houses.

**Small Dealers' Personal Letters**

## POST OFFICE DEPARTMENT VS. MAIL ORDER HOUSES.

THE postal officials at Washington are energetically following infractions of the Department rules, forbidding carriers in the rural free delivery service soliciting for retail mail order houses, or furnishing the names of patrons of rural routes. These regulations were amended in important particulars, as the result of legislation enacted at the last session of Congress; the amendments being incorporated in an official notice to the entire rural service by Fourth Assistant Postmaster-General Joseph L. Bristow, promulgated last June.

### Carriers Thoroughly Informed.

Carriers cannot plead ignorance of the present requirements of the service, as General Bristow did not wait until he had formulated the revised regulations before notifying the members of the service that the abuses mentioned must cease on penalty of dismissal.

On April 30, 1904, the following notice for the guidance of carriers was issued:

All rural carriers are cautioned to refrain from taking part in any schemes where premiums are offered for any purpose in which their connection with the service is to be used. Any one doing so will subject himself to discipline.

Shortly after General Bristow, convinced that the regulations pertaining to the furnishing of lists of names of people on rural routes receiving mail matter were being violated, promulgated the order herewith:

Reliable information has reached the Department that on various pretexts efforts are being made to get from postmasters and carriers names and addresses of patrons of rural free delivery service. You are hereby advised that rural carriers and all post office officials are strictly prohibited from giving out such names and addresses and from compiling directories for public use or assisting to compile same.

The Department is determined to stop these abuses, which have been but partially checked as the result of Congressional enactments and the modified regulations issued thereunder.

### Tempting Rural Carriers.

The restrictions placed upon the service appear to have stimulated the ingenuity of the managers of the retail mail order houses, so that carriers have been subjected to various forms of temptation to induce them to violate or evade the rules.

### Legal Action Against Mail Order Houses.

The postal officials have given this aspect of the case careful consideration and the question has been raised whether the power of the Department of Justice can be exerted to proceed against such firms and individuals as have offered bribes to carriers, to violate the postal regulations, which have the force of statutory law.

### An Inexpensive, Effective Way of Distributing Large Catalogues.

The Department's attention has been drawn to a clever attempt, made by one Chicago retail mail order house, to take advantage of the adverse public opinion recently directed against a rival concern, as the result of an order from the Post Office condemning its methods. The latter house some time ago offered carriers 8 cents apiece to distribute their catalogues, the books to be shipped in bulk as freight to the post office from which their routes radiated. General Bristow, becoming cognizant of this offer, which was widely advertised, notified the rural service that compliance with it would result in dismissal. At once the rival house addressed the rural carriers, in part, as herewith:

How any house pretending to have any commercial standing can ask a carrier to violate the postal regulations in such a way as would be almost sure to lead to his immediate dismissal from the service is something we cannot understand. They ask you to deliver catalogues for 8 cents when the regular postage is 30 cents, thus depriving the Government of a large revenue and doing something that will most surely lead to your dismissal, for the sake of saving $20 to $25. Fourth Assistant Postmaster-General Bristow says: "Any carrier who complies with the terms of this advertisement will be removed from the service." If the time ever comes when you are permitted to distribute catalogues or you can get some relative, friend or neighbor to do so, we will pay you more liberally than any one else. We are ready, anxious and willing to do more for you than any other house will do. Do you think if the patrons of your route understand about this offer being made they would send such a house any more orders?

It is no strain on the imagination to comprehend that while looking one way, its author was rowing another; while ostensibly looking askance at a competitor's processes, the suggestion was incidentally made to the carrier of a plan whereby he might distribute the rival's catalogues through "some relative, friend or neighbor," while for all practicable purposes the carrier would be the actual beneficiary. The operation of this slick scheme would cause the Government to lose the postage just the same as in the other offer.

### A Rod in Pickle for Offending Carriers.

The Post Office Department officials will make examples of any carriers who attempt to evade the law by carrying on correspondence with mail order houses surreptitiously. The Post Office officials surmise that the mail order houses have in mind particularly the substitute carriers, one of whom is appointed for each route—often a brother, son or other relative, and occasionally the sister or wife of the rural carrier. There are approximately 30,000 of these substitutes in the service, the value of whose work in such instances will be easily appreciated. A staff of special agents is investigating all information received regarding alleged violations of Post Office laws and regulations, and no evasions through the medium of substitutes will be tolerated.

## SIMMONS HARDWARE COMPANY.

SIMMONS HARDWARE COMPANY, St. Louis, Mo., has been awarded prizes at the Louisiana Purchase Exposition as follows: Grand prize for the best Hardware exhibit and the general excellence of Keen Cutter goods in their class—that is, the Hardware class of the Manufactures Building; grand prize for Keen Cutter Cutlery, gold medal for Keen Klipper Lawn Mowers, and gold medal, highest award, for the best exhibit in the Department of Manufactures, this department embracing all exhibits in the Manufactures and Varied Industries buildings.

The company's magnificent display has attracted much attention, the aisle in front of it being crowded constantly. The wonder among the visitors is that so unique and attractive a display can be made with small articles of Hardware, and the ingenuity and originality of the exhibit excites universal and favorable comment. The exhibit is what is termed a live one, there being constant life and motion about it. It was designed and constructed by the company's employees, 12,407 pieces of Hardware being used in its make up.

## WASHINGTON HARDWARE ASSOCIATION.

ADVICES from A. C. Blake, Whatcom, Wash., secretary of the Washington Hardware Association, indicate the prosperous condition of that organization and the fact that all the members are working harmoniously for the common cause. Each year sees the association augmenting its strength, as more interest is taken by the members in the objects for which it was created. So far this year nearly every point for which it has contended has been gained. The annual meeting is being held this week at Tacoma.

## PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.*

ERIE SPECIALTY COMPANY, Erie, Pa.: Catalogue illustrating its latest designs of Walker Cork Screws and Bottle Openers, with fancy cocobola handles, &c., intended to be easy for the hand as well as ornamental and attractive in appearance. A poem entitled "Sir Corkscrew's Soliloquy," which is referred to as perhaps the first written on the subject of Cork Screws, is also presented.

ARTHUR T. RUTTER & Co., 256-257 Broadway, New York: Pamphlets calling attention to the lines of Brass, Bronze, German Silver and Copper Sheets, Rods, Wire and Tubing made by them. Much of the material they deal in is special and made to order.

SPENCER WIRE COMPANY, Worcester, Mass.: Pamphlets relating to Wire Tree Guards, Towel Racks, Box Pull, Shipping Tag Fastener, Cut Florists' Wire, Overall and Suspender Trimmings, Carnation Supports, Brass Plated Drapery Poles, Market Wire, &c.

MCKINNEY MFG. COMPANY, Allegheny, Pa.: Circular descriptive of McKinney's Improved Truck, which is especially adapted for handling heavy barrels, casks or boxes with ease and rapidity.

GEM MFG. COMPANY, Pittsburgh, Pa.: Complete catalogue of the company's products: Steel and Brass Oilers, Heavy Mill Oilers and Torches, Mill and Foundry Specialties, Loose Pulley Lubricators, Flue Scrapers, Flexible Shaft and Boiler Cleaners, impulse or power; Special Work in Dies, Stamped Steel and Stamped Brass.

THE HICKOX, MULL & HILL COMPANY, Toledo, Ohio: Catalogue devoted to the Toledo line of Garden Tools. These include Hand Power Garden Seeders, Plows, Cultivators, Weeders, Mulchers, Hillers and Wheel Hoes. The Tools are designed for use by farmers, for those having small gardens, for practical gardeners and for every man and woman interested in improved methods in the garden and truck patch.

DIAMOND SAW & STAMPING COMPANY, Buffalo, N. Y.: Pamphlet relating to Hack Saw Blades for hand use and for power machines; also Sterling Adjustable Hack Saw Frames.

JANESVILLE BARB WIRE COMPANY, Janesville, Wis.: Illustrated pamphlets relating to Janesville Woven Wire Fences, including regular style; Poultry and Rabbit, Crib and Apex, Fence Stretchers, &c.

PARKER WIRE GOODS COMPANY, Worcester, Mass.: Illustrated catalogue and price-list No. 2 devoted to bright Wire Goods, Chain, Drawer and Box Pulls, Coat, Hat and Ceiling Hooks, Wire Clothes Lines, Bird Cage Hooks, Green Corn Shellers, Standard and Miscellaneous Wire Nails, Kitchen Articles, Bathroom Articles, &c.

THE ADVANCE MACHINERY COMPANY, Toledo, Ohio: Illustrated catalogue and price-list relating to scientific Glue Heating Equipment, including a variety of devices for heating glue by Gas Water Heaters, also Pot Warmers, Glue Pots, Oil Lamp Pot Heaters, Soakers, &c.

THEO. J. ELY MFG. COMPANY, Girard, Pa.: Circular illustrating Ideal Waffle Irons, including the regular and high frame Round Irons and the oblong Twin Baker Iron.

THE SOUTHINGTON CUTLERY COMPANY, Southington, Conn., New York office and warerooms with C. E. Jennings & Co., 42 Murray street: Illustrated catalogue of Curry Combs, showing a large line of these goods. Some are new patterns, while many of the older styles have been improved by substituting stamped steel shanks for malleable iron parts in the construction of various patterns of Curry Combs. The entire line has been overhauled and bettered in a number of ways.

J. G. Wilson has bought the Hardware stock of Geo. Grogman, at Piqua Kan.

CONTENTS.


| | PAGE. |
|---|---|
| The First Electric Locomotive for the New York Central. Illustrated | 1 |
| The Battle Ship New Jersey Launched | 5 |
| The Carnegie Steel Railroad Tie | 5 |
| Three New Multiple Spindle Sensitive Drills. Illustrated | 5 |
| Secrecy in Customs Reappraisements | 7 |
| Professor Howe on the Gayley Dry Blast | 8 |
| Chicago's New Charter and Municipal Ownership | 8 |
| The Steel Casting Trade Unsatisfactory | 8 |
| The Billings & Spencer Hot Saw. Illustrated | 9 |
| A. M. Byers & Co., Incorporated | 9 |
| The New Additions to the Navy | 9 |
| The Bement-Miles Ten-Foot Radial Drill. Illustrated | 10 |
| Allis-Chalmers Personnel | 10 |
| Lake Mining Matters | 11 |
| The Elyria Gas Engine. Illustrated | 12 |
| Duty on Loom Heddles | 13 |
| The New England Foundrymen's Association | 14 |
| The Sumners Gravity Dump Car. Illustrated | 14 |
| The Dutiability of Commissions | 15 |
| Forging Machinery | 16 |
| The Produce Exchange Pig Iron Warrant Department | 17 |
| Progress in Naval Ordnance | 18 |
| Steam Engineering in the Navy | 19 |
| The Adriance New Type Combined Drawing and Reducing Press. Illustrated | 20 |
| Notes on Southern Pig Iron | 22 |
| Trade Publications | 23 |
| Editorial: | |
| The National Finances | 24 |
| The Chances of Importing Pig Iron | 24 |
| Industrial Railroads and the Anti-Rebate Law | 25 |
| Is American Enterprise in Danger of Eclipse? | 25 |
| The Eight-Hour Law | 26 |
| The Problem of Diverting Immigration to Rural Regions | 26 |
| The Susquehanna Iron & Steel Company | 26 |
| The National Metal Trades Association | 27 |
| Rogers, Brown & Co. | 27 |
| Statistics of the United States Steel Corporation for the Calendar Year 1903 | 27 |
| Obituary | 28 |
| Personal | 28 |
| Manufacturing: | |
| Iron and Steel | 29 |
| General Machinery | 29 |
| Power Plant Equipment | 30 |
| Fires | 30 |
| Hardware | 30 |
| Miscellaneous | 31 |
| The Iron and Metal Trades: | |
| A Comparison of Prices | 32 |
| Chicago | 32 |
| Philadelphia | 34 |
| Cleveland | 35 |
| Cincinnati | 36 |
| Pittsburgh | 36 |
| The New York Machinery Market | 38 |
| Mexican Railway and Industrial Notes | 39 |
| New York | 39 |
| The National Machine Tool Builders' Association | 40 |
| Metal Market | 42 |
| Iron and Industrial Stocks | 42 |
| Hardware: | |
| Condition of Trade | 43 |
| Notes on Prices | 45 |
| The Graham Nut Company | 47 |
| Requests for Catalogues, &c. | 47 |
| The Catalogue House Question | 48 |
| Death of David D. Batcheider | 48 |
| The Atlantic City Conventions | 49 |
| British Letter | 51 |
| Hunting Window Display. Illustrated | 51 |
| Brown-Hurley Hardware Company's Catalogue | 51 |
| Trade Winning Methods | 52 |
| A Hardware Shop in Bangkok. Illustrated | 53 |
| Retail Hardware Merchants Going Out for Business | 54 |
| Post Office Department vs. Mail Order Houses | 55 |
| Simmons Hardware Company | 55 |
| Washington Hardware Association | 55 |
| Price-Lists, Circulars, &c. | 56 |
| F. E. Myers' Address | 57 |
| New Markets for American Hardware | 58 |
| Miscellaneous Notes: | |
| Beeswax Joint Calipers | 59 |
| Invincible Wedge Plate Hammer | 59 |
| New Toggle Bolt. Illustrated | 60 |
| Combination Breast and Chain Drill. Illustrated | 60 |
| Portable Oil Lamp Glue Pot Heater. Illustrated | 60 |
| Dixie Curtain Rod. Illustrated | 60 |
| Soss Invisible Hinge. Illustrated | 61 |
| Current Hardware Prices | 62 |

# F. E. MYERS' ADDRESS.

FOLLOWING is the annual address of F. E. Myers of F. E. Myers & Bro., Ashland, Ohio, at the eleventh convention of the National Association of Agricultural Implement and Vehicle Manufacturers, which is now in session at Chattanooga, Tenn.:

DEVELOPMENT IN MANUFACTURING AND AGRICULTURE.

The inventive skill and industry of the predecessors of the present members of the National Association of Agricultural Implement & Vehicle Manufacturers produced the Breaking Plow, the Cultivator, the Planter, Wagon, &c., which aided the pioneer farmer in developing this entire country.

Less than 100 years ago substantially this whole country was uninviting and practically valueless, because it was without population. We are greatly indebted to the pioneers, who left home and friends to try their fortunes amid the perils and hardships of frontier life. Their requirements interested and stimulated our predecessors to bring out Implements and Vehicles adapted for their needs, and as a result, as visitors and citizens of this splendid city, we have to-day this rich domain and a degree of prosperity unsurpassed in the world's history. The fact, therefore, that we have, step by step, reached this degree of prosperity, until to-day, as an association, we stand for the production of a large share of the world's requirements in Implements and Vehicles, cannot help but impress us with the executive ability of our predecessors and the importance of our association as a factor in the commercial, industrial and agricultural life of the nation, and the influence we can wield in the satisfactory solution of the great problems of the present and future.

Our association, being national in scope, and supplying a product so vital and necessary to the prosperity of the nation, is, therefore, in an advantageous position to secure for its members benefits in national and State legislation, freight and passenger transportation and in promoting higher ideals in the agricultural life of the country.

LABOR QUESTION.

The past year in the main, except in the textile and mining industries of the country, has been singularly free from labor troubles, and the industries represented in our association have had a fair degree of prosperity. At the first meeting of the Executive Committee, in 1903, it was thought advisable to state the position of the association on this important question, and the following resolution was reported and unanimously adopted:

> *Whereas*, The National Association of Agricultural Implement and Vehicle Manufacturers stands for the timely consideration of its members in State and National legislation, freight and passenger traffic, higher education along agricultural lines, and the consideration due them in the manipulation of the employment of labor consistent with the constitutional rights and welfare of the employer and employee; and,
>
> *Whereas*, We deplore the present unfortunate condition and differences between the employer and the employed, and believing that there is a measure of right and justice on both sides of the question; therefore be it
>
> *Resolved*, That, while we appreciate the rights of labor, we realize that the time has come when the manufacturer, to be successful, must select his employees in harmony with his individual judgment and existing conditions, regardless of whether said employees are, or are not, affiliated with any society or organization.

THE CLOSED SHOP.

I believe this resolution voices the prevailing sentiment of the members of this association on this question. Speaking for my firm only, I am opposed to the closed shop because I believe it is wrong in principle and that every man has the right to work where and for whom he pleases.

I am also opposed to the closed shop because I believe it destroys a man's initiative, and the stimulus to further progress and endeavor, making him simply a machine to produce a certain fixed amount of work each day with the minimum of effort and for the highest wage his employer can be forced to pay. I therefore believe that the closed shop should be abolished and that the time has come when the manufacturer must be permitted to select his employees in harmony with his individual judgment and free from the dictation of trades unions or labor bosses.

It is a matter for congratulation that during the past year no legislation detrimental to the manufacturing interests of the country has been placed on the statute books. The Eight-Hour law and the Anti-Injunction bill were so vigorously opposed by the National Association of Manufacturers, aided by individual members of this association, that they failed to get beyond the confines of their respective committee rooms.

They will, no doubt, be resurrected at the next session of Congress, and the fight will have to be renewed, but the power and influence of associations like ours have been felt by our legislators, and there is no apparent probability of these bills, with the aroused public sentiment on this question, soon securing a place on the statute books of the country.

IRRIGATION OF ARID LANDS.

The irrigation of the arid lands of the West is a subject in which we, as an association, and as manufacturers individually, should be vitally interested. Irrigation is as old as civilization itself. If we turn back the pages of history we shall find the problem solved in a crude way in the deserts of Asia Minor and Syria. In the great West an empire lies slumbering, only awaiting the revivifying influence of the lifegiving element to make it thrill and throb with life and "blossom as the rose."

PANAMA CANAL.

An ocean waterway that should link the Pacific and Atlantic oceans and mingle their waters has been the dream of long centuries. It now seems certain that the Panama Canal will be completed within the next decade. It is a matter for congratulation that this dream of the centuries is to become a substantial reality and that it is to be accomplished by the Federal Government, and by American engineers.

The completion of this canal will not only mark one of the greatest epochs in American history, but will render accessible new markets on the western South American coast. It will shorten the water route to the Pacific coast by thousands of miles, mitigating the chances of ocean disaster, and will compel the railroads of the country to reduce their rates to the Pacific Coast to meet this new competition by water.

No other industrial body will profit more by the completion of this great engineering work, it seems to me, than the National Association of Agricultural Implement and Vehicle Manufacturers. The association and its members individually should urge the Government on in its speedy completion.

This immense engineering work will effect great changes in the maritime interests of the world. Whether Jap or Slav shall prove victor in the present conflict, the time of mighty events is dawning in the Orient. The Louisiana Purchase Exposition has created great interest in the Philippines, and the Japanese spirit of enterprise and imitation is shown in every department of that great exposition, establishing beyond doubt that great benefits are to follow the additional trade that can be secured in this direction.

This canal will be of the utmost value to this nation not only in a commercial sense, but in case of war with any of the European powers. It will no longer be necessary to send our fighting ships around the Horn, as in the case of the Oregon during the Spanish War. A whole fleet can be sent through the canal in one-third of the time. It will also add immensely to the efficiency and fighting strength of the navy.

SHIP SUBSIDY.

A ship subsidy bill for the creation of an American merchant marine for the transportation of American exports and imports should, in my judgment, be enacted immediately. We must hold and increase our foreign trade and create greater expansion of our industries through direct communication and trade relations.

The imperative need of expansion for the marketing of what we produce appeals to me in the nature of some policy that will enable us to reach the markets of the world under our own flag.

I am familiar with the fact that subsidies are generally unpopular, but my observation and experience in foreign countries and in foreign shipments lead me to the strong conviction that we should carry our products in our own ships and under our own flag, thus securing protection everywhere.

We must have the broadest possible expansion of our markets for our products and equalize conditions in some way, by a subsidy or otherwise, so that capital will become engaged in building up our merchant marine on a competitive basis, equal to the facilities possessed by other nations, and transport our wares at ruling shipping rates.

RECIPROCITY WITH CANADA, ETC.

At our last convention in Cleveland we were fortunate to have present with us the Hon. John Charlton, M.P., who admirably set forth the benefits to be gained by the establishment of reciprocal trade relations between the United States and Canada. While it is true that our trade has been increasing, notwithstanding the tariff barriers maintained between the two countries, and the preference of one-third to Great Britain, the leaders of public opinion in Canada assert that in the light of present developments neither country can afford much longer to obstruct the flow of trade between the two countries or allow it to be diverted to other markets.

Here is an immense country, lying contiguous to the United States, and with no natural barrier between us; a country of unexampled fertility and resources, and peopled mostly by the English speaking race. The members of this association spend thousands of dollars annually "chasing rainbows," seeking trade in Europe, South Africa, South America and Australia, with little or no effort to secure the trade of our northern neighbor. Even now Canada is the third best customer of the United States.

American capital is becoming more largely interested year by year in Canadian industries and enterprises, and with less restricted trade relations greater opportunities would be afforded American capital and enterprise in the advantages that Canada offers.

In 1896 Canada purchased from Great Britain goods to the value of about $33,000,000. Last year, even under the fostering influence of the one-third rebate provided by the preferential duty, British imports into Canada had only increased to about $62,000,000. On the other hand, Canada's purchases from the United States during the same period increased from $61,000,000 to over $150,000,000.

What is true of Canada is equally true of Mexico, and I would therefore recommend that this convention adopt resolutions to be sent to President Roosevelt that he may call the attention of Congress to this question, which is of such manifest

importance to the members of this association, as well as all other industries of the United States.

AN IMPROVED CONSULAR SERVICE.

We are measured as a nation and people, to a great extent, by foreign nations by the men who represent us in the consular service of the United States. These men are really our "business agents." These places, for many years and during many administrations, have been given as rewards for party service. Occasionally a capable man gets into the consular service in this way, and his influence is felt in increased trade relations; but these cases are rare indeed.

It is very desirable that capable men only should be appointed to these positions, which are such a vital factor in developing the foregn trade of the United States. It is my understanding that the Lodge bill, introduced by Senator Lodge of Massachusetts, has met with the approval of the National Business League. It provides, I believe, for the following:

1. Substitution of salaries for fees.
2. Improved classification or grading and transfer of consular officers.
3. Adoption of the merit system in the selection of consuls.
4. Consuls must be familiar with either the French, German or Spanish language, and possess a knowledge of the commercial resources of the United States with reference to the possibilities of increasing and extending the trade of the United States with foreign countries to which they are accredited.
5. Consuls shall be eligible for promotion.
6. Tenure of office to continue only during efficiency and conduct of the highest grade.

There is not the slightest doubt but that the passage of a law based on the above would be productive of great improvement in the consular service, and I would recommend that our association co-operate with the National Business League in securing this much needed reform.

TARIFF COMMISSION.

I am very much in favor of a Tariff Commission or some method by which the tariff will be taken out of politics, and have it decided by men in touch with the needs of the country, and who would consider the question broadly and not politically. The time has come when the American exporter abroad needs protection, as well as the American manufacturer at home.

CARELESS COST COMPUTATION.

Our association can be made of great benefit in the study of costs. Unless manufacturers study cost carefully, they are simply groping in the dark. They may possibly make money, but it is more likely that without a knowledge of what their products are costing them, they will surely run into the hands of a receiver.

Our membership can help each other greatly in particulars relating to costs if they will take hold of the subject earnestly and treat with each other candidly and in good faith. This is a matter that in my judgment can be taken up systematically and on a basis that will avoid the seeming wide difference in net costs, that really does not exist between the different manufacturers.

Inquiry into the cause of failure of a few esteemed business friends reveals the fact that they were deceived by their superintendents and foremen, who had made false calculations and statements concerning the cost of material, labor, &c.

It is manifest that we should take this matter into our own hands, and on an intelligent basis make our price, regardless of what others do. The American manufacturer to be successful must be an economist, know exact costs and have the courage to abandon slipshod ways or product.

THE PARCELS POST BILL.

This association has in the past taken a determined stand in opposition to the passage of the Parcels Post bill, believing it to be detrimental to the interests of the retail Implement dealer of the country.

The passage of this bill is urged by every catalogue house and large department store in the United States. These houses, which are now such a menance to the retail dealer, would profit immensely by the adoption of such a law, as it would enable them to send through the mails to their customers many bulky articles now denied that privilege, as this bill proposes to largely increase the variety of articles that may be sent through the mails, as well as the weight limit over the 4-pound limit now permitted by the Government.

Manufacturers, and the public in general, have been looking forward to the adoption of penny postage by the Government. Under the present postage rates the Post Office Department is confronted each year with a deficit. The adoption of penny postage would prove a benefit to every one, but it seems quite probable that if the Parcels Post bill ever becomes a law penny postage will be deferred many years; in fact, it will become a very remote possibility.

The adoption of this bill would also affect the business of many of the small retail establishments of the country to such an extent that they would have to be discontinued for lack of sufficient business to justify.

I would, therefore, recommend that the Committee on National Legislation co-operate with the Dealers' Federation and organizations of a like nature in opposing the passage of the Parcels Post bill.

DEALERS' FEDERATION.

We are pleased to have with us in convention representatives of the National Federation of Retail Implement and Vehicle Dealers' Associations. The interests of the manufacturer and dealer are mutual and their relations should be harmonious. We are dependent on the retail dealers of the country for the distribution of our products to the consumer. Their success is a great contributing factor in our success.

This association is pledged to the promotion of their interests and to co-operate with them in every effort to bring about an improvement in the character and responsibility of those engaged in the retail Implement trade.

W. S. Thomas, H. C. Staver, C. V. Dodge, W. W. Collier, H. M. Kinney and your president met the Conference Committee of the Federation at the Coates House, Kansas City, January 19, 1904.

The question of defective parts, where it was clearly the fault of the manufacturer, was discussed, and it was the judgment of the Federation Committee that under such a condition it was only proper and right that the manufacturer should pay the express or freight charges both on the defective part, if returned, and also on the new part to replace same, and their committee recommended the adoption of this suggestion by our association.

The adoption of this suggestion would, in the opinion of your president, incur contingencies and conditions that many members of the Federation are showing an inclination to improve upon in behalf of the manufacturer.

CLASSIFICATION OF DEALERS BY COMMERCIAL AGENCIES.

The subject of a more correct classification of dealers by the commercial agencies was also discussed—viz., that the reports should show plainly the lines handled, and in the case of blacksmiths and general stores that handle Implements and Vehicles regularly, it be so stated that jobbers and manufacturers cannot, as at present, take it for granted that all blacksmiths and general stores are Implement and Vehicle dealers simply because some are.

Your president wrote to both *Dun* and *Bradstreet* in regard to this matter of classification. Dun's agency stated that their reference book classifies dealers in Hardware and Agricultural Implements, giving a separate classification for dealers in Carriages and Wagons, and still another for general stores, and that where the word "Implements" was not used to express the business of a general storekeeper, it was safe to conclude that he is not a dealer in Implements.

## NEW MARKETS FOR AMERICAN HARDWARE.

BRAZIL has learned a lesson from the United States, the effect of which, in the course of a few years, is destined to greatly change the character and current of her foreign trade. Previous to 1862 the United States imported nearly all of its Hardware, Cutlery and Sporting Guns. In that year we abolished slavery and more than doubled our tariff rates. The result of the tariff legislation was that in a comparatively brief interval we were able to manufacture most of our Iron and Steel wares, increase their variety and enhance their quality; and but for the obstacles which the Act of Emancipation encountered the agriculture of the South would have undergone a similar revolution; it would have become more diversified, improved and profitable.

### Brazil's Progress.

Without going through the dreadful ordeal of a civil war Brazil is following closely in our footsteps. The slaves are now all emancipated and the unprofitable coffee and sugar cultures are giving way to cereals, cotton, tobacco, spices, fruits and numerous other industries, while the tariff has been raised to a point which has already affected Sheffield, and will soon touch Solingen. Fortunately for us, it does not interpose any practical barrier to trade with the United States, a fact due to our special pre-eminence in machine made goods.

### Sheffield Marking Time.

The class of Hardware made in Sheffield is mostly hand made, such as Table and Pocket Cutlery, Butcher Knives, Scissors, Razors, Saws, Edge Tools, &c. Of late years the Solingen cutlers, borrowing many of their ideas from the United States, have almost superseded the crude German products of 40 years ago, and brought out handsomely finished goods at prices which have become the despair of Sheffield, with the result that they have almost entirely thrust out the Sheffield men from the trade of Brazil. Like remarks apply to the House Furnishing Hardware trade of Birmingham; it has been largely forestalled in foreign markets by German goods.

### Solingen Checked.

In their turn the Solingen men are shaking. Messrs. Clark & Co.'s American boot and shoe factory at Sao Paulo has opened their eyes to the facility with which all small machine made articles of Hardware may in future be

produced in Brazil at a profit. What the Brazilian workman lacks is neither muscle nor industry. White porters, with burdens on their heads weighing as much as 200 pounds avoirdupois, can sometimes be seen in the streets of Rio. The Brazilian only lacks skill, and this is what American machines will supply.

**Primacy of the United States.**

In the larger and heavier items of Hardware, such as Steam, Electrical and Agricultural Machinery, and all classes of goods which either require large capitals and plants for their economical production, such as Machine Tools, Carriages, Cars, Automobiles, &c., or in those which depend upon rapid mechanical skill in assembling, repairing, &c., like Bicycles, Sewing Machines and Typewriters, the United States will continue to maintain its pre-eminence for many years to come, no matter how high the Brazilian tariff is raised.

**Provincialism of Country Stores.**

While the stores in Rio, Bahia and Pernambuco are able to make a limited show of as handsome articles of Hardware as are usually seen elsewhere, such is not the case with the country towns. The persistence of the German drummers, coupled with the almost entire absence of American competitors, has enabled the former to "land" the country merchant with the very dregs of the trade—Pistols that won't shoot straight, Cutlery that won't cut, blunt pointed Screws, Hammered Nails, and Builders' Hardware such as Noah might have used when he constructed the Ark. The moment one leaves the lines of railway which branch out from Rio he meets with this sort of Hardware stock. The sole explanation of the country merchant is that nothing better is within his reach. Catalogues and price-lists in English are of no use to him, for he can neither read them nor convert the prices into familiar money. As for going to Rio himself, not one in a dozen ever dreams of it; and so long as the planter and his other customers were satisfied with the goods which he had to sell he never troubled himself to seek for better.

**Necessity that Knew No Law.**

But now everything is altered. The low prices of coffee and the commercial depression which followed it alarmed and aroused the planters. Many of them went to Rio in order to ascertain for themselves the causes of this condition of affairs. Some of them traveled into Europe and the United States to inquire into the difficulty. The result has been that they are now changing their cultures, and these demand new, different, and improved Tools, Implements, Machinery and Hardware generally, especially American goods, which they recognize as the most serviceable, the best finished, and, in the end, the cheapest. The Banco da Republica is lending them or their correspondents generous aid, and the Government is behind the bank.

**Docking Betterments in Rio.**

The improvement of the Port of Rio, on which the Administration is expending several millions in the construction of wharves to enable ships to load and discharge and in the erection of warehouses and other buildings, is a subject which has an important bearing upon the Hardware trade between the United States and Brazil. Except for the custom house boats, the market boats and other small craft, there is no dock accommodation in Rio. With a bay unrivaled throughout the world for its security, extent and beauty, there is no landing where a large ship can load and unload. Everything has to be conveyed in lighters between ship and shore. This not only adds to the cost of the goods so conveyed, but greatly delays delivery and transmission. This is not due to shoal water, but to the neglect of improvement. A mole from the city front to the Ilha das Cobras and a wharf in front of that island will enable a ship to haul alongside in 7 or 8 fathoms of water.

**Breakwater at Pernambuco.**

Pernambuco is even worse off for improvements, because it is an open port and the lighters have to get through the surf. The Government is also providing a remedy there. A breakwater is to be constructed and various other improvements are to be made. But the works at Rio are those which chiefly concern the Hardware trade, for these not only include docks and warehouses, but also a large number of private dwellings, to take the place of those which the port improvements will destroy. All kinds of Builders' Hardware will be in demand for these works, and the sooner the American salesman appears on the scene the worse it will be for Solingen and Remscheid.

**Proposed Irrigation Systems.**

Sundry irrigation schemes for Ceará and Bahia are also being considered, and, generally speaking, there are to be seen the signs of "a general shake up all around" in the various departments of Brazilian industry. When it is remembered that Brazil has twice the population of the Philippine Islands, all of whom, with the exception of a few natives, are free, energetic and accustomed to work, and an area greater than the United States, it will be recognized what a big market it is for surplus American products. The partiality of Brazilians for American goods and the comparative proximity of her coasts open a wide door for a mutually profitable and advantageous trade.

**How to Capture a Part of the Business.**

To stimulate this trade and direct it to the United States all that is needed is for a few American manufacturing houses to take part in establishing a suitable agency in Rio to solicit orders for their goods; first, in that city, and afterward throughout Brazil generally, at prices delivered in Rio. The prices must be quoted in Brazilian money, and the variance between them and American gold coin insured against by buying exchange ahead. This is the course pursued by the German and other foreign commission houses in Rio, with the result that they have built up a large and very profitable trade upon grades of goods every one of which are excelled in quality and outbid in cheapness by our own Hardware manufacturers and merchants. If the Germans, with inferior goods, can hold this trade, we, with superior goods, can win it from them, and there is no good reason why the attempt should not be made.

**Volume of Brazil's Exports.**

Brazil is now exporting her products (chiefly agricultural) to the value of nearly $200,000,000 (American gold coin) per annum, of which the United States takes 40 per cent. Yet we sell her only $10,000,000 worth per annum; and of this, Hardware and Machinery, both of which she greatly needs, only come to $1,500,000. Our neglect of such a trade deserves reproach. It is perhaps scarcely necessary to add that in preparing and shipping Hardware and Machinery for the Brazilian market there are certain necessary details to be observed which pertain to climate, trade seasons, shipping routes and facilities, packing, custom house regulations and patent laws. There is no difficulty whatever about these matters. They are within the knowledge of everybody familiar with the country, and offer no impediment to trade.

## MISCELLANEOUS NOTES.

### Beeswax Joint Calipers.

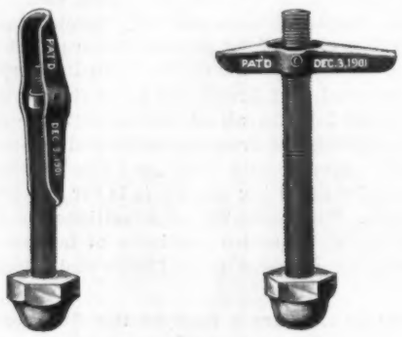
The Sawyer Tool Mfg. Company, Fitchburg, Mass., is offering a new line of calipers, which are referred to as embodying every desirable feature found in other calipers, with the additional advantage of a beeswax joint, constructed in such a manner that the wax is indefinitely retained. This is alluded to as giving the joint that firmness of feeling desired and appreciated by mechanics. The points are hardened and the tools are well finished.

### Invincible Wedge Plate Hammer.

F. W. & E. A. Peck, Cohoes, N. Y., are now manufacturing the Invincible wedge plate hammer, patented, formerly made by Wallis, Robinson & Co., Chicago. The head of this hammer is warranted to stay on and the handle not to break. Three styles are made, No. 11½, bell face adze eye, and Nos. 1½ and 1, plain face adze eye.

## New Toggle Bolt.

The Steward & Romaine Mfg. Company, 124 North Sixth street, Philadelphia, Pa., is placing on the market the toggle bolt here shown before and after putting in a wall. The bolt consists of a steel hood, or head, a pivoted nut, an endless threaded bolt with a brass bonnet, or cap head, to take the place of an ordinary iron nut when a finished appearance is required. The bolt is intended to screw through the pivoted nut and pass

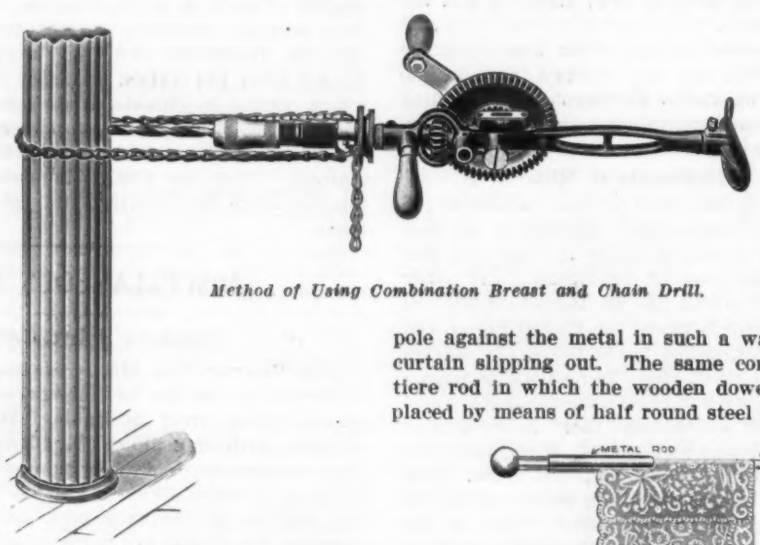



*New Toggle Bolt.*

through the hole in the head when screwed through the nut, thus locking the head. This is to insure the toggle bolt holding if either end should break out the tile or wall. The inner end of the bolt has the thread upset to prevent it unscrewing entirely out of the pivoted nut, making it easy to withdraw and save the toggle. The point is made by the manufacturer that there are many other good features about the bolt which will make it available when ordinary toggle bolts will not answer.

## Combination Breast and Chain Drill.

The Millers Falls Company, 28 Warren street, New York, has just put on the market the combination breast and chain drill No. 25 here illustrated. The frame and gears of this tool are exactly like their No. 12 breast drill, having two speeds, spirit level, adjustable handle with 2½-inch variation, cocobolo handles, nickeled chuck and crank and japanned frame and breast plate. The tool has ball bearings, and pressure can be obtained by means of the safety chain, the links of which are about

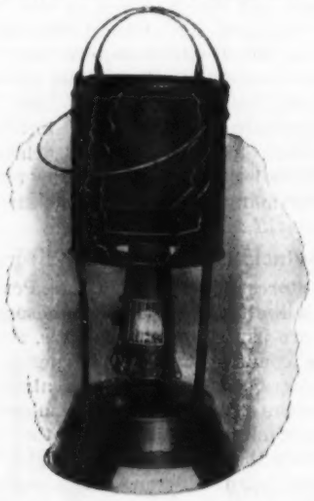


*Method of Using Combination Breast and Chain Drill.*

¾ inch long. In use a link of the chain on each side is caught in the hooks provided for that purpose and the amount of feed delicately adjusted by use of two knurled disks of proper size, which can be readily operated by the mechanic to obtain the required pressure for drilling metals or other materials. This drill is an all around drill for mechanics, but the company especially recommends it for plumbers, millwrights and electricians. It can be used equally well as a plain breast drill.

## Portable Oil Lamp Glue Pot Heater.

The Advance Machinery Company, Toledo, Ohio, is offering the trade the oil lamp glue pot heater shown herewith. It is made of extra heavy copper throughout, constructed so as to attain great concentration of heat to prepare glue quickly. Regulation of the flame maintains the glue at a desirable temperature at all times.

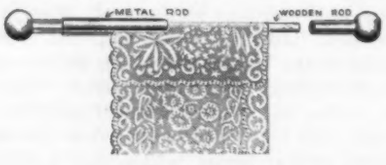


*Portable Oil Lamp Glue Pot Heater, Model S-1.*

The following advantages possessed by the heater are enumerated by the manufacturer: That the heater costs little to operate, owing to the small quantity of oil used; that brass eyelets add greatly to the life of the pot; that it is easily portable; that it is made of the best material and is of the best workmanship throughout, and that workmen appreciate having hot glue on a bench. The heater is designed for use in small shops and for pattern makers, bookbinders, &c., in 1 and 2 quart capacity.

## Dixie Curtain Rod.

The Lovington Mfg. Company, Decatur, Ill., is placing on the market the curtain rod which we illustrate herewith. The distinctive feature of the rod is the fact that a wooden rod is slipped into a metal tube or rod which has an open slot, so that the curtain hangs through the slot. The weight of the curtain presses the wooden pole against the metal in such a way as to prevent the curtain slipping out. The same company makes a portiere rod in which the wooden dowel is omitted and replaced by means of half round steel buttons to which the




*Dixie Curtain Rod.*

portiere is sewed. The buttons slide back and forth in the groove readily and yet hold the drapery firmly in place. Another point of advantage claimed by the manufacturers is an artistic one, because with this rod the unsightly tucks at the top of the curtain are hidden and

replaced by a brass or oxidized copper pole with brass knobs at its ends, which makes an attractive setting to the top of the window. It is not necessary for the housewife to sew or baste the curtain to the rod in any way, but simply to wrap it around the wooden dowel, the weight of the curtain furnishing all necessay security. To remove the curtain one of the ornamental knobs at the end of the rod is unscrewed, the wooden dowel is drawn out and the curtain drops of its own weight. The rods are made of 20-gauge steel, with brass or oxidized copper finish, the rigidity of the rod avoiding sagging of the center. It is stated that, even with those of great length, no center hanger is necessary. They are made in three sizes: ¾-inch, 1-inch and 1¼-inch, the smaller sizes being used for ordinary residence windows and the largest for portieres.

## Soss Invisible Hinge.

The Soss Invisible Hinge Company, 150 Nassau street, New York, is manufacturing the Soss invisible door hinge,

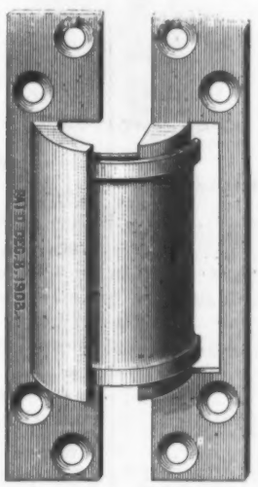


*Fig. 1.—Soss Invisible Door Hinge.*

shown in the accompanying illustrations, Fig. 1 illustrating the hinge itself, and Fig. 2 as mounted. Among its advantages as stated by the company are, that it is absolutely concealed except when the door is open, and then only a small amount of metal is exposed from the inside; doors will not warp or sag; joints, dust, air and sound proof, and suitable for hanging doors from the lightest in cabinet work to those of the heaviest character. The hinge is made only in the finest grade of bronze metal and consists of three pieces. When closed, the inside and center pieces engage and pass into the outside piece, thus concealing the entire hinge. It is unnecessary to take the hinges apart when mounting.

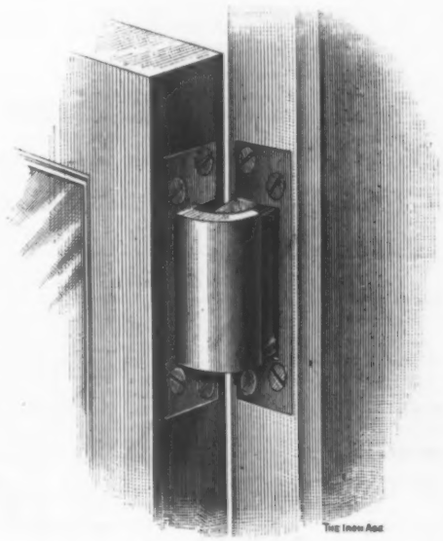


*Fig. 2.—Hinge Mounted.*

For use in railroad cars or any situation where space is an important consideration no room is needlessly wasted when the door is open, as must occur with the ordinary bronze butts having an offset varying with the size of the butt. If conditions require frequent removal of doors, as, for instance, those on Pullman cars, which are cleaned after every trip, it is only necessary to loosen but not remove a small set screw in the center piece of the hinge, and pass or slip the center piece further over in its regular channel—into the half of hinge attached to the door, which will instantly uncouple and release the two principal parts, leaving each securely screwed to jamb or door. The door can be as easily rehung. This hinge is very much smaller proportionately than bronze metal butts intended for the same duty. The hinges are regularly finished to match any hardware trim in the finest residences.

# PAINTS, OILS AND COLORS

### White Lead, Zinc, &c.—

Lead, English white, in Oil.. 9¼@ 9¾
Lead, American white,, in Oil:
Lots of 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
In Barrels..... .. @ 6
Lead, White, in oil, 25 lb tin pails, add to keg price..... .. @ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price .. @ 1½
Lead, American, Terms: For lots 12 tons and over ¼ ¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.
Lead, White, Dry in bbls..... .. @ 6
Zinc, American, dry.....₱ lb 4⅝@ 4⅞
Zinc, French:
Paris, Red Seal, dry.....8¼
Paris, Green Seal, dry.....9⅜
Antwerp, Red Seal, dry.....7⅛
Antwerp, Green Seal, dry.....8½
Zinc, V. M. French, in Poppy Oil:
Green Seal:
Lots of 1 ton and over.....11¾@12
Lots of less than 1 ton.....11¾@12¼
Zinc, V. M. French, in Poppy Oil:
Red Seal:
Lots of 1 ton and over.....10¾@10¾
Lots of less than 1 ton.....10½@11
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

### Dry Colors—

Black, Carbon.....₱ lb 5 @10
Black, Drop, Amer..... 4 @ 6
Black, Drop, Eng..... 5 @15
Black, Ivory.....16 @20
Lamp, Com..... 4½@ 6
Blue, Celestial.....₱ lb 4 @ 6
Blue, Chinese.....29 @32
Blue, Prussian.....27 @30
Blue, Ultramarine..... 4½@15
Brown, Spanish..... ½@ 1
Carmine, No. 40.....₱ lb $3.55@4.00
Green, Chrome, ordinary..... 5½@ 6
Green, Chrome, pure.....17 @25
Lead, Red, bbls., ½ bbls. and kegs:
Lots 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
Litharge, bbls., ½ bbls. and kegs:
Lots 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
Ocher, American.....₱ ton $8.50@16.00
Orcher, American Golden..... 2½@ 3½
Orcher, French..... 1⅝@ 2¾
Orcher, Foreign Golden..... 3 @ 4
Orange Mineral, English..₱ lb 8¾@10½
Orange Mineral, French.....10½@11¼
Orange Mineral, German..... 7 @10
Orange Mineral, American.... 8 @ 8¾
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 3 @ 3¾
Red, Turkey, English..... 4 @10
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer..₱ 100 lb $0.50@1.25
Red Venetian, English..100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered .....₱ lb 3 @ 9½
Sienna, Ital., Raw, Powd.... 3 @ 6½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered .....₱ lb 1½@ 2
Talc, French.....₱ ton $20.00@30.00
Talc, American.....₱ ton $13.75@25.00
Terra Alba, French..₱ 100 lb 90 @1.00
Terra Alba, English.....90 @1.00
Terra Alba, American No. 1..60 @70
Terra Alba, American No. 2..45 @50
Umber, T'key, Bnt. & Pow.₱ lb 2½@ 3½
Umber, Turkey, Raw & Pow.. 2½@ 3½
Umber, Burnt, Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome.....11 @14
Vermilion, American Lead....10 @25
Vermilion, Quicksilver, bulk.. .. @65
Vermilion, Quicksilver, bags.... @66
Vermilion, English, Import....75 @80
Vermilion, Chinese.....$0.90@1.00

### Colors in Oil—

Black, Lampblack.....12 @14
Blue, Chinese.....36 @46
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke.....11 @14
Green, Chrome.....10 @15
Green, Paris..... .. @24
Sienna, Raw.....12 @15
Sienna, Burnt.....12 @15
Umber, Raw.....11 @14
Umber, Burnt.....11 @14

### Miscellaneous—

Barytes, White, Foreign.....₱ ton $17.50@20.00
Barytes Amer. floated..... 16.00@17.00
Barytes, Crude, No. 1..... 10.00@11.00
Chalk, in bulk.....₱ ton 3.00@ 3.25
Chalk, in bbls.....₱ 100 lb .... @ .35
China Clay, English..₱ ton 12.00@17.00
Cobalt, Oxide.....₱ 100 lb 2.50@ ....
Whiting, Common....₱ 100 lb .45@ .48
Whiting, Gilders..... .55@ .57
Whiting, Extra Gilders'..... .58@ .60

### Putty—

In bladders..... 1½@2
In bulk..... 1.05@1.15
In cans, 1 lb to 5 lb..... 2⅝@4
In cans, 12½ to 25 lb..... 1⅝@2

### Spirits Turpentine—

In Oil bbls.....53½@54
In machine bbls.....54 @54½

### Glue—

Cabinet .....₱ lb 11 @13
Common Bone..... 6 @ 8
Extra White.....18 @24
Foot Stock, White.....11 @14
Foot Stock, Brown..... 7 @10
German Hides.....12 @18
French .....10 @40
Irish .....13 @16
Low Grade..... 8 @11
Medium White.....14 @17

### Gum Shellac—

| | Cts. | ₱ lb. |
|---|---|---|
| Bleached Commercial | 43 | @44 |
| Bone Dried | 53 | @54 |
| Button | 45 | @00 |
| Diamond I. | 59 | @.. |
| Fine Orange | 52 | @54 |
| A. C. Garnet | 45 | @46 |
| D. C. | 1.00 | @.. |
| Octagon B. | 54 | @55 |
| T. N. | 48 | @53 |
| V. S. O. | 60 | @.. |

### Animal, Fish and Vegetable Oils—

Linseed, City, raw.....₱ gal. 41 @42
Linseed, City, boiled..... 43 @44
Linseed, State and West'n, raw. 38 @39
Linseed, raw Calcutta seed..... @55
Lard, Prime, Winter..... 58 @60
Lard, Extra No. 1..... 48 @49
Lard, No. 2..... 36 @38
Cotton-seed, Crude, f.o.b. mills. 19½@21
Cotton-seed, Summer Yellow, prime ..... 27 @28
Cotton-seed, Summer Yellow, off grades..... 26½@27
Sperm, Crude..... 50 @..
Sperm, Natural Spring..... 53 @55
Sperm, Bleached Spring..... 57 @58
Sperm, Natural Winter..... 55 @56
Sperm, Bleached Winter..... 58 @59
Tallow, Prime..... 48 @50
Whale, Crude..... @..
Whale, Natural Winter..... 43 @44
Whale, Bleached Winter..... 45 @46
Menhaden, Brown, Strained.... 27 @28
Menhaden, Light, Strained.... 28 @29
Menhaden, Bleached Winter.. 30 @32
Menhaden, Ex-Bld, Winter... 32 @33
Menhaden, Southern..... 19½@20
Cocoanut, Ceylon..... 6¾@ 7
Cocoanut, Cochin..... 7¼@ 7½
Cod, Domestic..... 34 @36
Cod, Newfoundland..... 39 @41
Red Elaine..... 28 @30
Red Saponified.....₱ lb 4¼@ 4½
Olive, Italian, bbls..... 52 @55
Neatsfoot, prime..... 50 @51
Palm, prime Logoe.....₱ lb 5⅝@ 6

### Mineral Oils—

Black, 29 gravity, 25@30 cold test .....₱ gal. 11 @12
Black, 29 gravity, 15 cold test.. 12 @13
Black, Summer..... 11 @12
Cylinder, light filtered..... 18½@19½
Cylinder, dark filtered..... 16½@17½
Paraffine, 903-907 gravity..... 13 @13½
Paraffine, 903 gravity..... 12 @12½
Paraffine, 883 gravity..... 9¾@10
Paraffine, red..... 12 @13½
In small lots ½ ¢ advance.

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—
Domestic, ℔ doz. $3.00 ..... 33⅓%
North's ..... 10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—
Ives' Patent ..... 35%
Taplin's Perfection ..... 35%

### Ammunition— See *Caps, Cartridges, Shells, &c.*

### Anvils—American—
Eagle Anvils ..... ℔ 7¼@7¾¢
Hay-Budden, Wrought ..... 8¢@9¼¢
Horseshoe brand, Wrought ..... 8¢@9¼¢
Trenton ..... ℔ 9@9¼¢

### Imported—
Peter Wright & Sons ..... ℔ 10½¢

### Anvil, Vise and Drill—
Millers Falls Co., $18.00 ..... 15&10%

### Apple Parers— See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—
Hull Bros. Co. ..... 30&10%
Livingston Nail Co. ..... 33⅓%

### Augers and Bits—
*Com. Double Spur ..... 75@75&10%*
*Boring Mach. Augers .70&10@75%*
*Car Bits, 12-in. twist .. 60@60&10%*
*Jennings' Pattern .. 60&10&10@70%*
Ford's Auger and Car Bits ..... 40&5%
Forstner Pat. Auger Bits ..... 25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list .. 25%
No. 30, R. Jennings' list ..... 40&5&10%
Russell Jennings' ..... 25&10&2½%
L'Hommedieu Car Bits ..... 15%
Mayhew's Countersink Bits ..... 45%
Millers Falls ..... 50&10&5%
Ohio Tool Co.'s Bailey Auger and Car Bits ..... 40&10%
Pugh's Black ..... 20%
Pugh's Jennings' Pattern ..... 35%
Snell's Auger Bits ..... 60%
Snell's Bell Hangers' Bits ..... 60%
Snell's Car Bits, 12-in. twist ..... 60&10%
Wright's Jennings' Bits (R. Jennings' list) ..... 50%

### Bit Stock Drills—
See *Drills, Twist.*

### Expansive Bits—
Clark's small, $18; large, $36 .... 50&10%
Clark's Pattern, No. 1, ℔ doz. $26 .. 50&10%
No. 2, $18 ..... 50&10%
Ford's, Clark's Pattern ..... 50&10&60%
C. E. Jennings & Co., Steer's Pat. .. 25%
Swan's ..... 60%

### Gimlet Bits—
*Common Dble. Cut .gro. $3.00@3.25*
*German Pattern .... gro. $4.50@4.75*

### Hollow Augers—
*Bonney Pat., per doz. $10.00@11.00*
Ames ..... 25&10%
New Patent ..... 25&10%
Universal ..... 20%
Wood's Universal ..... 25%

### Ship Augers and Bits—
Ford's ..... 40%
C. E. Jennings & Co.:
L'Hommedieu's ..... 15%
Watrous' ..... 35&5%
Ohio Tool Co.'s ..... 40%
Snell's ..... 40%

### Awl Hafts— See *Hafts, Awl.*

### Awls—
*Brad Awls:*
*Handled ..... gro. $2.75@3.00*
*Unhdled, Shldered .. gro. 63¢@66¢*
*Unhandled, Patent .. gro. 66¢@70¢*
*Peg Awls:*
*Unhandled, Patent .. gro. 31@34¢*
*Unhdled, Shldered .. gro. 65¢@70¢*
*Scratch Awls:*
*Handled, Com ... gro. $3.50@4.00*
*Handled, Socket .. gro. $11.50@12.00*
Hurwood ..... 40%

### Awl and Tool Sets— See *Sets, Awl and Tool.*

### Axes—
*Single Bit, base weights, (up to 3½ lb.)*
*First Quality ..... $6.50*
*Second Quality ..... $5.75*
*NOTE.—Heavier Weights add Extras as per regular schedule.*

### Axle Grease— See *Grease, Axle*

### Axles— *Iron or Steel*
*Concord, Loose Collar .... 4@4½¢*
*Concord, Solid Collar .... 4½@5¢*
*No. 1 Common ..... 3½@3¾¢*
*No. 1½ Com., New Style 3¾@4¼¢*
*No. 2 Solid Collar ..... 4¼@5¢*
*Nos. 7, 8, 11 and 12 .... 75@75&65%*
*Nos. 13 to 14 ..... 70&10@75&65%*
*Nos. 15 to 18 ... 60&10@60&10&10%*
*Nos. 19 to 22 ..... 70&10@75%*

### Boxes, Axle—
*Common and Concord, not turned lb. 4½@4½¢*
*Common and Concord, turned. lb. 5@5¼¢*
*Half Patent ..... lb. 9@9½¢*

### Bait— Fishing—
Hendryx:
A Bait ..... 20%
B Bait ..... 25%
Competitor Bait ..... 20&5%

### Balances— Sash—
Caldwell new list ..... 50%
Pullman ..... 50&10@60%

### Spring—
*Spring Balances ..... 60@60&5%*
Chatillon's:
Light Spg. Balances ..... 40&10%
Straight Balances ..... 40%
Circular Balances ..... 50%
Large Dial ..... 30%

### Barb Wire— See *Wire, Barb.*

### Bars— Crow—
*Steel Crowbars, 10 to 40 lb .... per lb. 2¼@2¾¢*

### Towel
No. 10 Ideal, Nickel Plate .. ℔ gro. $8.50

### Beams, Scale—
*Scale Beams ..... 40&10@50%*
Chattillon's No. 1 ..... 30%
Chattillon's No. 2 ..... 40%

### Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned ..... $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned ..... $1.20
No. 10 Wire Galvanized .. ℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric ..... ℔ gro. $7.80
No. 2 Buffalo ..... ℔ gro. $9.00
No. 3 Perfection Dust ..... ℔ gro. $8.00

### Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned .... ℔ doz. $1.20
Holt, No. 1, Tinned ..... ℔ doz. $1.50
Holt, No. B, Japanned .... ℔ doz. $2.00
Holt, No. 2, Tinned ..... ℔ doz. $2.25
Lyon, No. 2, Japanned .... ℔ doz. $1.25
Lyon, No. 3, Japanned .... ℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover ..... $6.00
No. 75 Improved Dover ..... $6.50
No. 100 Improved Dover ..... $7.00
No. 102 Improved Dover, Tin'd .. $8.50
No. 150 Improved Dover, Hotel .. $15.00
No. 152 Imp'd Dover, Hotel, T'd .. $17.00
No. 200 Imp'd Dover Tumbler .... $8.50
No. 202 Imp'd Dover Tumbler, T'd .. $9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. ..... $25.00
Western, W. G. Co., Buffalo ..... $7.00
Wonder (S. S. & Co.) ℔ gro. net, $6.00

### Bellows—
*Blacksmith, Standard List .. 60&10@70&10%*

### Blacksmiths'—
*Net Prices.*

| *Inch..* | 30 | 32 | 34 | 36 | 38 | 40 |
|---|---|---|---|---|---|---|
| *Each..* | $3.25 | 3.50 | 4.00 | 4.50 | 5.00 | 5.75 |

*Extra Length:*

| *Each..* | $3.75 | 4.25 | 4.75 | 5.25 | 6.00 | 7.00 |
|---|---|---|---|---|---|---|

### Hand—

| *Inch...* | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Doz...* | $4.50 | 5.00 | 5.50 | 6.00 | 6.50 |

### Molders—

| *Inch.* | 9 | 10 | 11 | 12 | 14 |
|---|---|---|---|---|---|
| *Doz.* | $8.00 | 9.00 | 10.50 | 12.50 | 14.50 |

### Bells— Cow—
*Ordinary goods ..... 75&5@75&10%*
*High grade ..... 70&10@70&10&5%*
Jersey ..... 75&10%
Texas Star ..... 50%

### Door—
Abbe's Gong ..... 45%
Burton Gong ..... 50%
Home, R. & E. Mfg. Co.'s ..... 55&10%
Lever and Pull, Sargent's .... 60&10&10%
Trip Gong ..... 50&10@50&10&5%
Yankee Gong ..... 55%

### Hand—
*Hand Bells, Polished, Brass .. 60&5@60&10&5%*
*White Metal ..... 60%*
*Nickel Plated .... 50&10@50&10&5%*
*Swiss ..... 60@60&7½%*
Cone's Globe Hand Bells ..... 33⅓@35%
Silver Chime ..... 33⅓@35%

### Miscellaneous—
*Farm Bells ..... lb. 2¼¢*
*Steel Alloy Church and School 50&10&5@60&5%*
American Tube & Stamping Co. Gongs ..... 75%
Table Call Bells ..... 50@50&10%

### Belting— Leather—
*Extra Hvy, Short Lap .60@60&5%*
*Regular Short Lap ..... 60&10@60&10&10%*
*Standard ..... 70@70&5%*
*Light Standard ..... 70&10%*
*Cut Leather Lacing ..... 60&10%*
*Leather Lacing Sides, per sq. ft. 18¢*

### Rubber—
*Agricultural (Low Grade) .... 75@75&5%*
*Common Standard .... 70@70&10%*
*Standard ..... 65&70%*
*Extra ..... 60&5@60&10%*
*High Grade ..... 50&5@50&10%*

### Bench Stops— See *Stops, Bench*

### Benders and Upsetters, Tire—
Detroit Perfected Tire Bender ..... 40%
Green River Tire Benders and Upsetters ..... 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

### Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain ..... 50%
Parts ..... 50%
Spokes ..... 50%
Tubes ..... 60%

### Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks— Tackle—
*Common Wooden .... 70&10@75&5%*
Hartz St. Tackle Blocks ..... 50&50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves ..... 50&10%
Lane's Patent Automatic Lock and Junior ..... 30%
Stowell's Novelty. Mal. Iron .... 50&10%
Stowell's Self Loading ..... 60%
See also Machines, Hoisting.

### Boards, Stove—
*Zinc, Crystal, &c ... 30&10@40&10%*

### Boards, Wash— See *Washboards.*

### Bolts—

### Carriage, Machine, &c.—
*Common Carriage:*
*⅝ x 6 and Smaller ... 75&10@80%*
*Larger sizes ..... 75@75&10%*
*Phila. Eagle $3.00 list May 24, '99 80&10%*
*Bolt Ends, list Feb. 14, '95 .. 75@...%*
*Machine ..... 75&5@75&10&5%*
*Machine with C. & T. Nuts .. 70&5@...%*

### Door and Shutter—
*Cast Iron Barrel, Round Brass Knob:*

| *Inch.....* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz.* | $0.26 | .30 | .39 | .47 | .65 |

*Cast Iron Spring Foot:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.00 | 1.25 | 1.75 |

*Cast Iron Chain, Flat, Japanned:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.75 | 1.05 | 1.30 |

*Cast Iron Shutter, Brass Knobs:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.57 | .80 | 1.00 |

*Wrt Barrel, Japd. 75&10@75&10&10%*
*Wrt " Bronzed 50&10@50&10&10%*
*Wrought Spring .70&10@70&10&10%*
*Wrt. Shutter .. 50&10@50&10&10&5%*
*Wrt. Square Neck. 70&10@70&10&10*
*Wrt Square. 66⅔&10@66⅔&10&10%*
*Ives' Patent Door ..... 60%*

### Stove and Plow—
*Plow ..... 67&10@... %*
*Stove ..... 80&5@80&10&5%*

### Tire—
*Common ..... 72½%*
*Norway Iron ..... 80%*
American Screw Company:
Norway Phila., list Oct. 16, '84 .. 80%
Eagle Phila., list Oct. 16, '84 .... 82½%
Bay State, list Dec. 28, '99 ..... 72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84 .. 80%
Eagle Phila., list Oct. 16, '84 .... 82½%
Eclipse, list Dec. 28, '99 ..... 72½%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99 ..... 72½%
Norway Phila., list Oct., '84 ..... 80%
Upson Nut Co.:
Tire Bolts ..... 72½%

### Borers, Tap—
*Borers Tap, Ring, with Handle:*

| *Inch.....* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz...* | $4.30 | 5.00 | 5.75 | 7.25 |
| *Inch .....* | 2¼ | 2½ | | |
| *Per doz.....* | $6.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each ..... 25%

### Boxes, Mitre—
C. E. Jennings & Co. ..... 30%
Langdon ..... 15&10%
Perfection ..... ℔ doz. $30.00
Schatz ..... 40%

### Braces—
*Common Ball, American. $1.15@1.25*
Barber's ..... 50&10&10@60&10%
Fray's Genuine Spofford's ..... 60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ..... 60%
C. E. Jennings & Co. ..... 50&5%
Mayhew's Ratchet ..... 60%
Mayhew's Quick Action Hay Pat. .. 50%
Millers Falls Drill Braces ..... 25&10%
P., S. & W. Co., Peck's Pat. 60&10@65%

### Brackets—
*Wrought Steel ..... 80&10@... %*
Bradley's Wire Shelf:
Full cases ..... 80&10&10%
Broken cases ..... 80&10%
Griffin's Pressed Steel ..... 80%
Griffin's Folding Brackets ..... 70&10%
Stowell's Cast Shelf ..... 75%
Stowell's Sink ..... 50%
Western, W. G. Co., Wire ..... 60&10%

### Bright Wire Goods— See *Wire and Wire Goods.*

### Broilers—
Western, W. G. Co. ..... 80%
Wire Goods Co. ..... 75@75&10%

### Buckets, Galvanized—
Price per dozen.

| | *Quart.....* | *10* | *12* | *14* |
|---|---|---|---|---|
| *Water, Regular* | | *1.40* | *1.70* | *1.90* |
| *Water, Heavy* | | *3.40* | *3.70* | *3.80* |
| *Fire, Rd. Bottom* | | *2.30* | *2.55* | *2.95* |
| *Well* | | *2.55* | *2.87* | *3.15* |

### Bucks, Saw—
Hoosier ..... ℔ gro. $36.00

### Bull Rings— See *Rings, Bull*

### Butts— Brass—
*Wrought, list Sept., '96 .. 20@30%*
Cast Brass, Tiebout's ..... 50%

### Cast Iron—
*Fast Joint, Broad .... 50@50&10%*
*Fast Joint, Narrow ... 50@50&10%*
*Loose Joint ..... 70&5@70&10%*
*Loose Pin ..... 70&5@70&10%*
*Mayer's Hinges ..... 70&5@70&10%*
*Parliament Butts ... 70&5@70&10%*

### Wrought Steel—
*Extra 10@10&10%*

*Table and Back Flaps ... 75%*
*Narrow and Broad ..... 75%*
*Inside Blind ..... 75&10%*
*Loose Pin ..... 75%*
*Loose Pin, Ball and Steeple Tip ..... 50&20%*
*Japanned Ball Tip Butts ... 70&10%*
*Bronzed, Wrt., Nar. and Inside Blind Butts .... 55&10%*

### Cages, Bird—
Hendryx Brass:
3000, 5000, 1100 series ..... 5%
1200 series ..... 33⅓%
200, 300, 600 and 900 series ..... 40&10%
Hendryx Bronze:
700, 800 series ..... 40&10%
Hendryx Enameled ..... 40&10%

### Calipers—See *Compasses.*

### Calks, Toe and Heel—

*Blunt, 1 prong.....per lb.*4¼¢
*Sharp, 1 prong...per lb.*, 4½@4¾¢
Gautier, Blunt.....4@4¼¢
Gautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....₱ lb 3.65¢
Perkins', Sharp Toe.....₱ lb 4.15¢

### Can Openers—

See *Openers, Can.*

### Cans, Milk—

| | 5 | 8 | 10 gal. |
|---|---|---|---|
| Illinois Pattern | $1.35 | 1.85 | 2.05 each. |
| New York Pattern | 1.50 | 2.20 | 2.45 each. |
| Baltimore Pattern | 1.50 | 2.20 | 2.45 each. |
| Dubuque | 1.35 | 1.60 | 1.75 each. |

### Cans, Oil—

Buffalo Family Oil Cans:

| 3 | 5 | 10 gal. |
|---|---|---|
| $18.00 | 60.00 | 129.60 gro., net. |

### Caps, Percussion—

*Eley's E. B.....52@55¢*
*G. D.....per M 34@35¢*
*F. L.....per M 40@42¢*
*G. E.....per M 48@50¢*
*Musket.....per M 62@63¢*

### Primers—

*Berdan Primers, $2 per M.*20&5%
*B. L. Caps (Sturtevant Shells) $2 per M.....*20%
*All other primers per M.*$1.52@1.60

### Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50.....*10&5%
*38 C. F., $7.00.....*10&5%
*22 cal. Rim, $1.50.....*10&5%
*32 cal. Rim, $2.75.....*10&5%
*B. B. Caps, Con. Ball, Swgd.*$1.90
*B. B. Caps, Round Ball....*$1.40
*Central Fire.....*25%
*Target and Sporting Rifle..*15&5%
*Primed Shells and Bullets.*15&10%
*Rim Fire, Sporting.....*50%
*Rim Fire, Military.....*15&5%

### Casters—

*Bed.....*70@70&10%
*Plate.....*60&10@60&10&5%
*Philadelphia.....*75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

### Cattle Leaders—

See *Leaders, Cattle.*

### Chain, Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 |
|---|---|---|---|---|---|---|
| 7.40 | 5.10 | 4.15 | 3.45 | 3.30 | 3.20 | 3.15 |
| ⅝ | ¾ | ⅞ | 1 to 1¼ inch. | | | |
| 3.10 | 3.00 | 2.95 | 2.95 per 100 lb. | | | |

*German Coil.....*60&10&10@70%

### Halters and Ties—

*Halter Chains...*60&10@60&10&10%
*German Pattern Halter Chains, list July 24, '97.....*60&10&10%
*Cow Ties.....*60@60&10%

### Trace, Wagon, &c.—

*Traces, Western Standard: 100 pr.*
*6½—6-3, Str'ght, with ring.*$23.50
*6½—6-2, Str'ght, with ring.*$24.50
*6½—8-2, Str'ght, with ring.*$28.00
*6½—10-2, Str'ght, with ring.*$32.00
*NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.*
*Trace, Wagon and Fancy Chains.....*60&5@60&10&5%

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron.....*60&10@60&10&5%
*Brass.....*60&10@60&10&10%
*Safety Chain.....*75@75&10&5%
*Gal. Pump Chain....lb.* 4¼@4¾¢
Covert Mfg. Co.:
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

### Chalk—(From Jobbers.)

*Carpenters' Blue.....gro.* 35@38¢
*Carpenters' Red.....gro.* 30@33¢
*Carpenters' White....gro.* 25@28¢
See also Crayons.

### Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

### Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

### Chisels—Socket Framing and Firmer

*Standard List.....*70&10@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....70%
L. & I. J. White.....30@30&5%

### Tanged—

*Tanged Firmers....*40&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White, Tanged.....25&5%

### Cold—

*lb.*
*Cold Chisels, good quality..*13@15¢
*Cold Chisels, fair quality..*11@12¢
*Cold Chisels, ordinary...* 9@10¢

### Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....40%
Drill Chucks, Skinner Pat., 0, 1, 2.40%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8.....30%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

### Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.

### Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

### Sidewalk—

Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

### Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

### Clippers—

Chicago Flexible Shaft Company:
'96 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00..20%
Lightning Belt.....$15.00 }
Chicago Belt.....$20.00 } 15%
Stewart's Patent Sheep, $12.75.....20%

### Finger Nail Clippers—

Smith & Hemenway Co.₱ doz. net $2.00

### Clips, Axle—

*Eagle, 5-16 and ⅜ in..*75@75&10%
*Norway, 5-16 and ⅜ in.*60&10@70%

### Cloth and Netting, Wire

—See *Wire, &c.*

### Cocks, Brass—

*Hardware list:*
*Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....*70&10@75%

### Coffee Mills—

See *Mills, Coffee.*

### Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

### Combs, Curry—

Metal Stamping Co.....40%

### Mane and Tail—

Covert's Saddlery Works.....60&10%

### Compasses, Dividers, &c.

*Ordinary Goods.....*75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

### Conductor Pipe, Galva.—

*L. C. L. to Dealers:*

| *Territory.* | *Nested.* | *Not nested.* |
|---|---|---|
| *A. Eastern.* | 75&12½% | 75&7½% |
| *B. Eastern.* | 75&10&7½% | 75&12½% |
| *Central...* | 75&12½% | 75&5% |
| *Southern.* | 70&10&5% | 70&10% |
| *S. Western..* | 70&12½% | 70&7½% |

*Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

### Coolers, Water—

| Gal, each.. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Labrador... | $1.20 | $1.50 | $1.80 | $2.10 | $2.70 |
| Gal. | 3 | 4 | 6 | 8 | |
| Iceland, ea. | $1.80 | $2.10 | $2.40 | $3.00 | |
| Gal. | 2 | 3 | 4 | 6 | 8 |
| Galv. Lined, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

25%

Gavl. Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each. | $1.95 | $2.15 | $2.40 | $3.30 | $4.15..25% |

### Coopers' Tools—

See *Tools, Coopers'.*

### Cord—Sash—

*Braided, Drab.....lb.* 35¢
*Braided, White, Com..lb.* 21@22¢
*Cable Laid Italian.....*
*lb., A, 18¢; B, 16¢*
*Common India.....lb.* 10@10½¢
*Cotton Sash Cord, Tw'ted.*11@16¢
*Patent Russia.....lb...@*11¢
*Cable Laid Russia....lb...@*15¢
*India Hemp, Braided..lb...@*18¢
*India Hemp, Twisted..lb.* 12@13¢
*Patent India, Twisted.lb.* 12@13¢
Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12....₱ lb 28 ¢
Anniston, Nos. 7 to 12....₱ lb 22 ¢
Old Colony, Nos. 7 to 12..₱ lb 22 ¢
Anniston Drab, Nos. 7 to 12.₱ lb 26 ¢
Pearl Braided, cotton, No. 6, ₱ lb, 22¢; Nos. 7 to 12, 21¢.
Eddystone Braided, Nos. 7, 8, 9 and 10.....₱ lb 24 ¢
Eddystone Braided Cotton, No. 6..₱ lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₱ lb 36½ ¢
Braided, Italian Hemp....₱ lb 36 ¢
Braided, Linen.....₱ lb 53 ¢
Braided, White Cotton or Spot.....₱ lb 33 ¢
Massachusetts, White.....₱ lb 28 ¢
Massachusetts, Drab.....₱ lb 32 ¢
Phoenix, White, Nos. 7 to 12....24 ¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½ ¢

### Wire, Picture—

*List Oct., '00.....*
*85&10&10@85&10&10&5%*
Hendryx Standard Wire Picture Cord.....85&10&5%

### Cradles—

*Grain.....*40&12½%

### Crayons—

*White Round Crayons, gr. 5¼@6¢*
*Cases, 100 gro., $4.00, at factory.*
D. M. Steward Mfg. Co.:
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition).....gr. $2.00
Case lots, 20%
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black.....₱ gro. $4.00
See also Chalk.

### Crooks, Shepherds'—

Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

### Crow Bars—See *Bars, Crow.*

### Cultivators—

Victor Garden.....50%

### Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

### Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

### Meat and Food—

American.....30%

| Nos. | 1 | 2 | 3 | 4 | B | 5 |
|---|---|---|---|---|---|---|
| Each. | $5 | $7 | $10 | $25 | $50 | $60 |

Enterprise.....25@25&7½%

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each. | $2 | $3 | $2.75 | $4.50 | $6 |

Dixon's.....₱ doz. 30&10@40%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal.....40&10@50%
Little Giant.....₱ doz. 33⅓@40%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

N. E. Food Choppers.....40%
New Triumph No. 605, ₱ doz. $24.00..30&10@40%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....₱ doz. 30&10@40%

| Nos. | 100 | 150 |
|---|---|---|
| | $15.00 | $18.00 |

Enterprise Beef Shavers.....25@30%

### Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₱ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₱ gr. $18@$20
Slaw Cutters, 2 Knife..₱ gr. $22@$36

### Tobacco—

*All Iron, Cheap..doz.* $4.25@$4.50
Enterprise.....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

### Washer—

Appleton's, ₱ doz., $16.00....50&10&10%

## Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....₱ doz. $6.25
Iwan's Perfection Post Hole Digger..₱ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....₱ doz. $7.25
Kohler's Universal.....₱ doz. $15.00
Kohler's Little Giant.....₱ doz. $12.00
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9.00
Kohler's Rival.....₱ doz. $8.00
Kohler's Pioneer.....₱ doz. $7.20
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%
Samson, ₱ doz. $34.00.....25%

### Dividers—See *Compasses.*

### Doors, Screen—

Phillips', style E, ⅞ in....₱ doz. $10.50
Phillips', style 077, ⅞ in....₱ doz. $8.00
Phillips', style x-y, ⅞ in....₱ doz. $11.00

### Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

### Drawing Knives—

See *Knives, Drawing.*

### Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

### Drills and Drill Stocks—

*Common Blacksmiths' Drill, each.....*$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P. S. & W.....40&5%
Goodell Automatic Drills..40&5&40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 19, $12.00.....33⅓%

### Twist Drills—

*Bit Stock.....*60&10@60&10&10%
*Taper and Straight Shank....*
*60&10@60&10&5%*

### Drivers, Screw—

*Screw D'ver Bits, per doz..*45@60¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....40%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 29 and 21...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles..60@60&10&10%
No. 86.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

## Eave Trough, Galvanized—

| *Territory.* | *L. C. L.* |
|---|---|
| *A. Eastern.....* | *80&10&5%* |
| *B. Eastern.....* | *80&10&10%* |
| *Central.....* | *80&10&5%* |
| *Southern.....* | *80%* |
| *S. Western.....* | *75&10&10%* |

*Terms.—2% for cash. Factory shipments generally delivered.*
See also Conductor Pipe and Elbows.

### Elbows and Shoes—

*Factory shipments:*
*Plain Rd., and Cor., 2, 3 and 4 in.....*75%
*Plain Rd., and Cor., 5 and 6 in.....*60%
Perfect Elbows (S., S. & Co.).....40%

### Emery, Turkish—

| | *4 to 6* | *5 to 150* | *Flour* |
|---|---|---|---|
| *Kegs.....lb.* | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs.....lb.* | 5¼¢ | 5¾¢ | 3¾¢ |
| *Kegs.....lb.* | 5 ¢ | 6 ¢ | |
| *10-lb. cans, 10 in case.....* | 6½¢ | 7 ¢ | 6 ¢ |
| *10-lb. cans, less than 10.....* | 10 ¢ | 10 ¢ | 8 ¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extractors, Lemon Juice

—See *Squeezers, Lemon.*

## Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....45%

### Cord and Weight—

Ives.....40%

### Faucets—

*Cork Lined*.....50@50&10%
*Metallic Key, Leather Lined*..70@70&10%
*Red Cedar*.....40@40&10%
*Petroleum*.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—

See *Plates, Felloe.*

### Files— Domestic—

*List revised Nov. 1, 1899.*
*Best Brands*.....70&10@75&5%
*Standard Brands*.75&10@75&10&10%
*Lower Grade*....75&10&10@80&10%

### Imported—

*Stubs' Tapers, Stubs' list, July 24, '97*.....30%

### Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

### Grindstone—

*Net Prices:*

| *Inch* | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| *Per doz* | $2.15 | 2.85 | 3.25 | 3.75 | 4.50 |

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger.. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light.....60&10%

### Fodder Squeezers—

See *Compressors.*

### Forks—

*Base Discounts Aug. 1, 1899, list:*
*Hay, 2 tine*.....50&10&5%
*Boys' & Fish, 2 tine*..50&10&5%
*Hay & Boys', 3 tine*....60&5%
*Hay & Boys', 4 tine*....66⅔%
*Champion Hay*.....66⅔%
*Hay & Header, long 3 tine*.65%
*Header, 4 tine*.....65%
*Barley 4 & 5 tine, Steel*..60&20%
*Manure, 4 tine*.....60&15&2½%
*Manure, 5 & 6 tine*..66⅔&2½%
*Spading*.....70&2½%
*Potato Digger, 6 tine*....60&10%
*Sugar Beet*.....40&10%
*Coke & Coal*.....40&10%
*Heavy Mill & Street*.....65%
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

### Frames— Saw—

*White, S'g't Bar, per doz*..75@80¢
*Red, S'g't Bar, per doz*..$1.00@1.25
*Red, Dbl. Brace, per doz*.$1.40@1.50

### Freezers, Ice Cream—

| *Qt.* | 1 | 2 | 3 | 4 | 6 |
|---|---|---|---|---|---|
| *Each* | $1.25 | $1.60 | $1.90 | $2.20 | $2.80 |

### Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*

*Hemp*.....$2.75
*Cotton*.....3.20
*Waterproof Sgl. Taped*..3.65
*Waterproof Dbl. Taped*..4.40
*Waterproof Tpl. Taped*..5.15
} 10&2½%

### Gates, Molasses and Oil—

*Stebbins' Pattern*.80&10@80&10&5%

### Gauges—

*Marking, Mortise, &c*.....50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20@20&10&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30&10%

### Gimlets— Single Cut—

*Nail, Metal, Asst., gro*..$1.40@1.50
*Spike, Metal, Asst., gro*.$2.80@3.50
*Nail, Wood Handled, Assorted, gro. $1.75@2.00*
*Spike, Wood Handled, Assorted, gro. $4.25@4.50*

### Glass, American Window

See *Trade Report.*

### Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

### Glue, Liquid Fish—

*Bottles or Cans, with Brush*..25@50%
*Cans (½ pts., pts., qts., ½ gal., gal.)*.....25@48%
International Glue Co. (Martin's)....40&10%

### Grease, Axle—

*Common Grade*....*gro. $4.50@5.50*
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00

### Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

### Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

### Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓%
Pike Mower and Tool Grinder, each.....$6.00 }
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.25

## Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50&5%
Sisal Rope.....35&5%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.70%
Sisal Rope Ties.....60&10%

### Hammers—

### Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40@40&10&10%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7½@33⅓&10&7½%
Engineers' and R. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

### Heavy Hammers and Sledges—

*Under 3 lb., per lb. 50¢*.....80¢10¢10@85%
*3 to 5 lb., per lb. 40¢*.....80¢10¢10@85%
*Over 5 lb., per lb 30¢*..85@85¢10%
*Wilkinson's Smiths'*...lb. 9½@10¢

### Handles—

### Agricultural Tool Handles

*Axe, Pick, &c*.....60@60¢10%
*Hoe, Rake, &c*.....45@50¢5%
*Fork, Shovel, Spade, &c.:*
*Long Handles*.....45@50&5%
*D Handles*.....40%

### Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

### Mechanics' Tool Handles—

*Auger, assorted*...*gro. $2.50@$2.85*
*Brad Awl*.....*gro. $1.65@$1.85*
*Chisel Handles:*
*Apple Tanged Firmer, gro. assorted*.....*$2.40@$2.65*
*Hickory Tanged Firmer, gro. assorted*.....*$2.15@$2.40*
*Apple Socket Firmer, gro. assorted*.....*$1.75@$1.95*
*Hickory Socket Firmer, gro. assorted*.....*$1.45@$1.60*
*Hickory Socket Framing, gro. assorted*.....*$1.60@$1.75*
*File, assorted*.....gro. *$1.30@$1.40*
*Hammer, Hatchet, Axe, &c.*60¢10@60¢10¢10%
*Hand Saw, Varnished, doz. 80¢85¢; Not Varnished*...*65@75¢*
*Plane Handles:*
*Jack, doz. 30¢; Jack, Bolted.75¢*
*Fore, doz. 45¢; Fore, Bolted.90¢*
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50

### Hangers—

*NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c*

*Barn Door, New Pattern, Round Groove, Regular:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Single Doz.* | $0.90 | 1.25 | 1.60 | 1.95 | 2.50 |

*Barn Door, New England Pattern, Check Back, Regular:*

| *Inch* | 3 | 4 | 5 | 6 |
|---|---|---|---|---|
| *Single Doz.* | $1.30 | 1.85 | 2.50 | 3.00 |

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&2½%
Hinged.....net $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.15
Ball B'r'g St'l Track No. 10..$2.40
Roller B'r'g St'l Track No. 12..$2.30
Ball B'r'g St'l Track No. 13..$2.40
Roller B'r'g St'l Track No. 14..$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track...50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis Fry Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing...60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 125..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132...40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%

Extra 5@10% often given.

For Track, see Rail.

### Hangers— Garment—

Pullman Trouser, No. 1....℔ gro, $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

### Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

### Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

### Hatchets—

*Regular list, first quality*..40@..%
*Second quality $1.00 per doz. less than first quality.*

### Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

### Hinges—

### Blind and Shutter Hinges—

*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | 1 | 3 | 5 |
|---|---|---|---|
| *Doz. pair* | $0.85 | 1.75 | 3.50 |

*Mortise Shutter: (L. & P., O. S., Dixie, &c.)*

| *No.* | 1 | 1½ | 2 | 2½ |
|---|---|---|---|---|

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | 1 | 1½ | 2 |
|---|---|---|---|
| *Doz. pair* | $0.75 | .70 | .65 |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70&75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55.....70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75%
1868, Old Pat'n, Nos. 1, 3 & 5...75%
Tip Pat'n, Nos. 1, 3 & 5.....75%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 105.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

### Gate Hinges—

*Clark's or Shepard's—Doz. sets:*

| *No.* | 1 | 2 | 3 |
|---|---|---|---|
| *Hinges with L't'es* | $2.00 | 2.70 | 5.00 |
| *Hinges only* | 1.40 | 2.05 | 3.80 |
| *Latches only* | .70 | .70 | .35 |

*New England:*
*With Latch*.....*doz.* ...@$2.00
*Without Latch*..*doz.* ...@$1.60
*Reversible Self-Closing:*
*With Latch*.....*doz.* ...@$1.75
*Without Latch*..*doz.* ...@$1.35
*Western:*
*With Latch*.....*doz. $1.75*
*Without Latch*.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets.

| Nos. | 1 | 2 | 3 |
|---|---|---|---|
| Hinges with Latches | $2.00 | 2.70 | 5.00 |
| Hinges only | 1.40 | 2.05 | 3.80 |
| Latches only | .70 | .70 | 1.35 |

### Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

### Spring Hinges—

*Holdback Cast Iron*.....*gro. $9.00@$9.50*
*Non-Holdback, Cast Iron*.....*gro. $8.00@$8.50*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea, No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

## Wrought Iron Hinges—

*Strap and T Hinges, &c., list March 15, 1901:*

*Light Strap Hinges..80&5%*
*H'vy Strap H'g's.80&20&10%*
*Light T Hinges...75&10&5%*
*Heavy T Hinges....75&5%*
*Extra H'vy T H'g's.80&20%*
*Hinge Hasps.....70%*
*Cor. Heavy Strap.80&20&10%*
*Cor. Ex. Heavy T...80&20%*

*Extra 3 or 4 tons*

*Screw Hook and Strap.* { *6 to 12 in..lb. 3½ ¢* / *14 to 20 in..lb. 3 ¢* / *23 to 36 in..lb. 2¾ ¢*

*Screw Hook and Eye:*
*¾ to 1 inch.....lb. 6 ¢*
*⅝-inch .....lb. 7 ¢*
*½-inch .....lb. 9 ¢*

## Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

## Hods— Coal—

| | Per doz. | | | |
|---|---|---|---|---|
| *Inch* | *15* | *16* | *17* | *18* |
| *Galv. Open* | *$2.50* | *2.75* | *3.00* | *3.25* |
| *Jap. Open* | *$1.90* | *2.10* | *2.25* | *2.55* |
| *Galv. Funnel* | *$3.00* | *3.30* | *3.60* | *3.90* |
| *Jap. Funnel* | *$2.45* | *2.65* | *2.85* | *3.30* |

## Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

## Hoes— Eye—

*Scovil and Oval Pattern.....*
*60&10@60&10&10%*
*Grub, list Feb. 23, 1899.....*
*70&10@75&10%*
D. & H. Scovil.....35%

## Handled—

*August 1, 1899, list.*

*Field and Garden.....70&10%*
*Smith's Patent.....50%*
*Meadow & Rhode Island..75%*
*Black Diamond.....70&10%*
*Mortar and Street...70&10&10%*
*Planters' .....75&12½%*
*Cotton .....70&10&10%*
*Cotton Chopper.....75&12½%*
*Weeding Hoes.....66⅔&15%*
*Steel Weeders.....66⅔&15%*
*Malleable Weeders....66⅔&15%*
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'ting Shuffle Hoe, ℔ doz.$4.85

## Hoisting Apparatus—

See *Machines, Hoisting.*

## Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

## Door—

Empire .....50%
Bardsley's .....45%

## File and Tool—

Nicholson File Holders and File Handles .....33⅓&40%

## Hooks—Cast Iron—

Bird Cage, Reading.....60%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List.....60&10%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....66⅔%
Harness, Stowell's.....60%
School House, Stowell's.....70%

## Wire—

*Belt .....80&—%*
*Wire C. & H. Hooks:.....*
*75&10@75&10&5%*
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw. Co., Gem.....60&10%
Parker Wire Goods Co., King..75&10%
Van Wagoner, Coat and Hat.....70%
Wester W. G. Co. Molding.....75%
Wire Goods Co.:
Acme .....60&10%
Chief .....70%
Crown .....70&10%
Czar .....65%
V Brace.....70&10%
Czar Harness.....50&10%

## Wrought Iron—

*Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.*
*Cotton .....doz. $1.05@1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

## Miscellaneous—

*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25*

| *Grass....Nos.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| *Best .....* | *$1.50* | *1.75* | *2.00* | |
| *Common ...* | *$1.30* | *1.30* | *1.40* | *1.60* |

*Potato and Manure.....60&15%*
*Whiffletree .....lb. 5¾@6¢*
*Hooks and Eyes:*
*Brass .....60&10&10@70%*
*Malleable Iron....70&5@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks .....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

## Horse Nails—

See *Nails, Horse.*

## Horseshoes—

See *Shoes, Horse.*

## Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition .....ft. 4½@ 5 ¢*
*3-ply Standard....ft. 6½@ 7 ¢*
*4-ply Standard....ft. 7½@ 8 ¢*
*3-ply extra.....ft. 8½@ 9 ¢*
*4-ply extra.....ft. 10 @10½¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 6 @ 7 ¢*
*Fair Quality.....ft. 8 @ 9 ¢*

## Irons— Sad—

*From 4 to 10.....lb. 2¾@3 ¢*
*B. B. Sad Irons.....lb. 3¼@3½¢*
*Chinese Laundry....lb. 4¾@5 ¢*
*Chinese Sad.....lb. 4 @4¼¢*
*Mrs. Potts', cents per set:*

| *Nos.* | *50* | *55* | *60* | *65* |
|---|---|---|---|---|
| Jap'd Tops.... | *62* | *59* | *72* | *69* |
| *Tin'd Tops....* | *65* | *62* | *75* | *72* |

*New England Pressing.lb. 3¾@4¢*

## Pinking—

*Pinking Irons.....doz. 50@60¢*

## Soldering—

*Soldering Coppers, 2½ & 3..19@20¢*
*1½ & 2.....21@22¢*

## Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&5%
Steel .....45&2%
Covert's Saddlery Works:
Daisy .....60&10%
Victor .....60%
Lockport .....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

## Kettles—

*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See Ware, Hollow.

## Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

### Corn—

Withington Acme, ℔ doz., $2.65;
Dent, $2.75; Adj. Serrated, $2.20;
Serrated, $2.10; Yankee No. 1, $1.50;
Yankee No. 2, $1.15.

### Drawing—

*Standard List.....70&10@75&10%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's .....70&10&2½%
Watrous .....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge.....per doz. $5.50*
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

### Mincing—

Buffalo .....℔ gro. $13.00

### Miscellaneous—

*Farriers' .....doz. $3.00@3.25*
Wostenholm's .....℔ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch, or Maple, Rubber tip.....gro. $1.10@1.15*
*Carriage, Jap., all sizes.....*
*gro. 40@45¢*
*Door, Mineral.....doz. 65@70¢*
*Door, Por. Jap'd.....doz. 70@75¢*
*Door, Por. Nickel..doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c. 15%
Picture, Sargent's.....60&10&10%

## Lacing, Leather—

See *Belting, Leather—*

## Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

## Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading .....60%
Sargent's .....50&10%

## Lanterns—Tubular—

*Regular Tubular, No. 0.....*
*doz. $4.35@4.75*
*Lift Tubular, No. 0..doz. $4.75@5.25*
*Hinge Tubular, No. 0.....*
*doz. $4.75@5.25*
*Other Styles.....40&10@40&10&5%*

## Bull's Eye Police—

*No. 1, 2¾-inch.....$2.50@2.75*
*No. 2, 3-inch.....$2.75@3.00*

## Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

## Latches— Thumb—

*Roggin's Latches, with screw..*
*doz. 35@40¢*

## Door—

Richards' Bull Dog, Heavy, No. 125.40%
Richards' Trump, No. 127.....50%

## Leaders, Cattle—

*Small .....doz. 55¢; large, 60¢*
Covert Mfg. Co.....35%

## Lifters, Transom—

R. & E.....33⅓%

## Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet.....* | *$2.20* | *2.00* | *1.65* |
| *75 feet.....* | *$1.80* | *1.70* | *1.30* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

## Locks— Cabinet—

*Cabinet Locks...33⅓@33⅓&7½%*

## Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....45&20%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

## Elevator—

Stowell's .....50%

## Padlocks—

*Wrought Iron....75&10&5@80&5%*
R. & E. Mfg. Co. Wrought Steel and Brass .....75@75&10%

## Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent .....50&10%
Iron .....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock .....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading .....60%

## Machines—Boring—

*Com. Upr't, without Augers.$2.00*
*Com. Ang'l'r, without Augers.$2.25*
Without Augers.

| R. & E. Mfg. Co.: | Upright. | Angular. |
|---|---|---|
| Improved No. 3.. | $4.25 | No. 1..$5.00 |
| Improved No. 4.. | 3.75 | No. 2.. 3.38 |
| Improved No. 5.. | 2.75 | |
| Jennings' Nos. 1 and 4 | | 35&5% |
| Millers' Falls | | 5.75 |
| Snell's, Rice's Pat. | 2.50 | 2.75 |

## Corking—

Reisinger Invincible Hand Power.....
℔ doz. $48.00

## Fence—

Williams' Fence Machines....each, $5.50

## Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake .....20%

## Ice Cutting—

Chandler's .....12½%

## Washing—

Boss Washing Machine Co.: Per doz.

| Champion Rotary Banner No. 1.. | $54.00 |
|---|---|
| Standard Champion No. 1 | $48.00 |
| Standard Perfection | $26.00 |
| Cinti Square Western | $30.00 |
| Uneeda American, Round | $29.00 |

## Mallets—

*Hickory .....45&5@50%*
*Lignumvitæ .....45&5@50%*
*Tinners' Hickory and Apple-wood .....doz. 50@55%*

## Mangers, Stable—

Swett Iron Works.....50%

## Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

## Mats, Door—

Elastic Steel (W. G. Co.).....10%

## Mattocks—

See *Picks and Mattocks.*

## Milk Cans—See *Cans, Milk.*

## Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

## Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheap .....all sizes, $1.75@2.00*
*Good .....all sizes, $2.25@2.50*

| | *10* | *12* | *14* | 16-In. |
|---|---|---|---|---|
| *High Grade..* | *4.25* | *4.50* | *4.75* | *5.00* |

Continental .....60&5%
Great American.....70%
Great American Ball B'r'g, new list..70%
Quaker City.....70%
Pennsylvania .....60&5%
Pennsylvania, Jr. Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A. all Steel.....60&5%
Style E. High Wheel.....70&10&5%
Drexel and Gold Coin, special list..50%

## Nails—

*Wire Nails and Brads, Papered, List July 20, 1899....90@90&5%*
*Cut and Wire.* See *Trade Report.*
*Hungarian, Finishing, Upholsterers' &c.* See *Tacks.*

## Horse—

| Nos. | *6* | *7* | *8* | *9* | *10* | |
|---|---|---|---|---|---|---|
| Anchor ..... | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Champlain .. | 28 | 26 | 25 | 24 | 23 | .....50% |
| Coleman ..... | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Putnam ..... | 23 | 21 | 20 | 19 | 18 | ....33⅓% |
| New Putnam. | 19 | 18 | 17 | 16 | 16 | ..10&10% |
| Western ..... | | | | | | ℔ lb 8½¢ |

*Jobbers' Special Brands.....*
*per lb. 8@8½¢*

## Picture—

| | *1½* | *2* | *2½* | *3* | *3½ in.* |
|---|---|---|---|---|---|
| *Brass H'd.* | *.45* | *.60* | *.70* | *.95* | *1.00 gro* |
| *Por. Head..* | *1.10* | *1.10* | *1.10* | *..* | *.. gro* |

## Nippers—

See *Pliers and Nippers.*

## Nuts—

*Cold Punched: Off list.*
*Mfrs. or U. S. Standard.*
*Square, plain.....$5.10*
*Hexagon, plain.....$5.60*
*Square, C. T. & R.....$5.30*
*Hexagon, C. T. & R.....$6.00*
*Hot Pressed:*
*Mfrs., U. S. or Nar. Gauge Stan'd.*
*Square Blank.....$5.80*
*Hexagon Blank.....$6.30*
*Square Tapped.....$5.80*
*Hexagon Tapped.....$6.30*

## Oakum—

*Best or Government.....lb. 6½¢*
*Navy .....lb. 5 ¢*
*U. S. Navy.....lb. 6 ¢*
*Plumbers' Spun Oakum.....2½¢*
*In carload lots ¼¢ lb. off, f.o.b. New York.*

## Oil Tanks—See *Tanks, Oil.*

## Oilers—

*Brass and Copper.....50&10%*
*Tin or Steel.....65&10%*
*Zinc .....65&10%*
*Chase or Paragon:*
*Brass and Copper...45&10@50%*
*Tin or Steel.....65&10%*
*Zinc .....65&10%*
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40. ℔ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

## Openers— Can—

*French .....doz. 35¢*
*Iron Handle.....Per doz. 25@27¢*
*Sprague, Iron Handle*
*Per doz. 35@40¢*
*Sardine Scissors...doz. $1.75@$3.00*
National .....50%
Stowell's Sprague.....℔ doz. 35@45¢

## Egg—

Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

## Packing—

*Asbestos Packing, Wick and Rope .....lb. 1½@2&15¢*

## Rubber—

*Sheet, C. I.....8@10¢*
*Sheet, C. O. S.....9@13¢*
*Sheet, C. B. S.....10@14¢*
*Sheet, Pure Gum.....50@65¢*
*Sheet, Red.....40@50¢*
Jenkins' '96, ℔ lb 80¢.....25@25&5%

## Miscellaneous—

*American Packing...lb. 7@10 ¢*
*Cotton Packing.....lb. 16@25 ¢*
*Italian Packing.....lb. 9@12½¢*
*Jute .....lb. 4@ 4½¢*
*Russia Packing.....lb. 8@11 ¢*

## Pails, Creamery—

S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

## Pails, Water, Well, &c.—

See *Buckets.*

## Pans— Dripping—

*Standard List...60&10@60&10&10%*

## Fry—

*Common Lipped:*

| *Nos. ....* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz..* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

## Refrigerator, Galva.—

| *Inch .....* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz.....* | *$1.95* | *2.25* | *2.80* | *3.15* |

## Roasting and Baking—

Regal, S., S. & Co., ℔ doz., Nos. 5, $1.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

| No. | 40 | 50 | 60 | 140 | 150 | 160 |
|---|---|---|---|---|---|---|
| | $30.00 | 35.00 | 42.00 | 34.00 | 39.00 | 46.00 |

## Paper—Building Paper

| *Asbestos:* | *lb.* |
|---|---|
| *Building Felt.....* | *2¾¢* |
| *Mill Board, sheet, 40x40 in..* | *3½¢* |
| *Mill Board, roll, thicker than 1-16 inch.....* | *3½¢* |
| *Mill Board, 1-16 inch thick and less.....* | *2½¢* |

*Per roll*

*Rosin Sized Sheathing: 500 sq. ft.*
*Light weight, 25 lbs. to roll*
*$0.40@0.45*
*Medium weight, 30 lbs. to roll, $0.45@0.50*
*Heavy weight, 40 lbs. to roll.. $0.65@0.70*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$11.00*
*Red Rope Roofing, 250 sq. ft. per roll.....$1.75*
*NOTE.—These goods are often sold at delivered prices.*

### Tarred Paper—

*1 ply (roll 300 sq. ft.), ton*.... $32.50@35.00
*2 ply, roll 108 sq. ft*.....55@60¢
*3 ply, roll 108 sq. ft*.....78@80¢
*Slater's Felt (roll 500 sq. ft.)*.75¢

*NOTE.—Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.*

R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

### Sand and Emery—

*Flint Paper and Cloth*.60@60&10%
*Garnet Paper and Cloth*....25%
*Emery Paper and Cl'h*.50&10@60%

### Parers— Apple—

| | |
|---|---|
| Advance | ℔ doz. $4.00 |
| Baldwin | ℔ doz. $4.00 |
| Bonanza Improved | each $6.50 |
| Daisy | ℔ doz. $4.00 |
| Dandy | each $7.50 |
| Eureka Improved | each $20.00 |
| Family Bay State | ℔ doz. $15.00 |
| Improved Bay State | ℔ doz. $36.00 |
| Little Star | ℔ doz. $5.00 |
| New Lightning | ℔ doz. $7.00 |
| Reading 72 | ℔ doz. $3.25 |
| Reading 78 | ℔ doz. $6.25 |
| Rocking Table | ℔ doz. $8.20 |
| Turn Table '98 | ℔ doz. $6.00 |
| White Mountain | ℔ doz. $5.00 |

### Potato—

| | |
|---|---|
| Saratoga | ℔ doz. $7.00 |
| White Mountain | ℔ doz. $6.00 |

### Picks and Mattocks—

*List Feb. 23, 1899*..70¢10@75¢10%

### Pinking Irons—

See *Irons, Pinking.*

### Pins, Escutcheon—

*Brass*.....60@60¢10%
*Iron, list Nov. 11, '85*..60@60¢10%

### Pipe, Cast Iron Soil—

*Standard, 2-6 in*.....50¢10%
*Extra Heavy, 2-6 in*.....65%
*Fittings*.....70%

### Pipe, Merchant—

*Carload Lots.*

| | Steel. Blk. | Steel. Galv. | Iron. Blk. | Iron. Galv. |
|---|---|---|---|---|
| ⅛ & ¼ in.. | 69% | 53% | 67 % | 51 % |
| ⅜ & ½ in.. | 73% | 61% | 71 % | 59 % |
| ¾ to 6 in.. | 77% | 67% | 75½% | 65½% |
| 7 to 12 in.. | 72% | 57% | 70½% | 55 % |

### Pipe, Sewer—

*Jobbers' Prices—*
*Standard Pipe and Fittings, 2 to 24 in.:*
*New England*.....67%
*New York and New Jersey*.70%
*Maryland, Delaware, E. Pa*.72%
*West. Pa. and West Va*...73%
*Virginia*.....75%
*Ohio, Michigan and Ky*....75%
*Indiana*.....77½%

*NOTE.—Carload lots are generally delivered.*

### Pipe, Stove—

| Edwards' Nested Stove Pipe: | C. L. | L. C. L. |
|---|---|---|
| 5 in., per 100 joints | $7.00 | $8.00 |
| 6 in., per 100 joints | 7.50 | 8.50 |
| 7 in., per 100 joints | 8.50 | 9.50 |

### Planes and Plane Irons—

### Wood Planes—

*Bench, First qual*..40&5@40&10%
*Bench, Second qual*.50&5@50&10%
*Molding*.....33⅓&5@33⅓&10%
Bailey's (Stanley R. & L. Co.)..... 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

### Iron Planes—

Bailey's (Stanley R. & L. Co.)..... 25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

### Plane Irons—

*Wood Bench Plane Irons*..... 30&5@30&10%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co..20&10@20&10&10%
Union.....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

### Plates—

*Felloe*.....lb. 3¾@4¢
Self-Sealing Pie Plates (S., S. & Co.), ℔ doz. $2.00.....50%

### Pliers and Nippers—

*Button Pliers*.....75&10@80%
*Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.*
*Gas Pipe*.. 7 $2.00 | 8 $2.25 | 10 $3.00 | 12-in. $3.75
Acme Nippers.....50@60&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers.....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

### Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co..30&10@30&10&10%
Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓%

### Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

### Points, Glaziers'—

*Bulk and 1-lb. papers*....lb. 8 ¢
*½-lb. papers*.....lb. 8¾¢
*¼-lb. papers*.....lb. 9½¢

### Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

### Police Goods—

*Manufacturers' Lists*...25@25&5%
Tower's.....25%

### Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro., $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz.....$2.00

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside.....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese.....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans, ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

### Poppers, Corn—

*1 qt., Square*.....gro. $9.00
*1 qt., Round*.....gro. $10.00
*1½ qt., Square*.....gro. $11.00
*2 qt., Square*.....gro. $13.00

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots, Glue—

*Enameled*.....40%
*Tinned*.....35%

### Powder—

*In Canisters:*
*Duck, 1 lb*.....each 45¢
*Fine Sporting, 1 lb*....each 75¢
*Rifle, ½-lb*.....each 15¢
*Rifle, 1-lb*.....each 25¢
King's Semi-Smokeless:

| Keg (25 lb bulk) | $6.50 |
|---|---|
| Half Keg (12½ lb bulk) | $3.50 |
| Quarter Keg (6¼ lb bulk) | $1.90 |
| Case 24 (1 lb cans bulk) | $8.50 |
| Half case (1 lb cans bulk) | $4.50 |

King's Smokeless: Shot Gun. Rifle.

| Keg (25 lb bulk) | $12.00 | $15.00 |
|---|---|---|
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 9.75 |

Robin Hood Sm'less Shot Gun..50&20%

### Presses—

### Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears

See *Shears.*

### Pullers, Cork—

Invincible Cork Puller.....$21.00

### Pullers, Nail—

Cyclops.....50%
Miller's Falls, No. 3, ℔ doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ℔ doz. $9.60.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ℔ doz. $6.00
Diamond B, No. 3, case lots..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....40%

### Pulleys, Single Wheel—

| *Inch* | 2 | 2½ | 3 |
|---|---|---|---|
| *Awning, doz* | $0.55 | .85 | 1.15 |
| *Hay Fork, Swivel or Solid Eye. doz., 4 in., $1.05; 5 in., $1.35* | | | |
| *Inch* | 2 | 2¼ | 2½ |
| *Hot House, doz* | $0.70 | .90 | 1.25 |
| *Inch* | 1¼ | 1½ | 1¾ 2 |
| *Screw, doz* | $0.16 | .19 | .23 .30 |
| *Inch* | 1¾ | 2 | 2¼ 2½ |
| *Side, doz* | $0.30 | .40 | .55 .63 |
| *Inch* | 1½ | 1¾ | 2 2½ |
| *Tackle, doz* | $0.30 | .42 | .58 1.00 |

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

### Sash Pulleys—

*Common Frame; Square or Round End, per doz, 1¾ and 2 in*.....16@19¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.. ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

### Pumps—

*Cistern*.....60@60&10%
*Pitcher Spout*.....80@80&10%
*Wood Pumps, Tubing, &c*..45@50%
Barnes Dbl. Acting (low list)..50&10%
Barnes' Pitcher Spout.....80%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

### Pump Leathers—

*Plunger and Lower Valve—Per gro.:*

| *Inch* | 2 | 2¼ | 2½ | 2¾ |
|---|---|---|---|---|
| | $2.20 | 2.50 | 2.75 | 3.00 |
| *Inch* | 3 | 3¼ | 3½ | 3¾ 4 |
| | $3.30 | 3.60 | 3.85 | 4.10 4.40 |

*Plunger Cup Leathers—Per 100:*

| *Inch* | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | $2.75 | 3.85 | 5.00 | 6.00 |

### Punches—

*Saddlers' or Drive, good*..... *doz. 50@75¢*
*Spring, single tube, good quality*.....$1.75@2.00
*Revolving (4 tubes)*..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's No. 1 (A. B. C.), ℔ doz. $15.50
No. 2, ℔ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....60%

## Rail—Barn Door, &c.—

*Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:*

| ½ | ⅝ | ¾ in. | |
|---|---|---|---|
| $1.70 | $2.10 | $3.00 | *100 feet.* |

*Angular for Sq. Groove Wheels:*

| *Small.* | *Med.* | *Large.* | |
|---|---|---|---|
| $1.50 | $1.90 | $2.60 | *100 feet.* |

*Sliding Door, Iron Painted*..... 2½@2¾¢
*Sliding Door, Wrought Brass, 1¼ in., lb., 36¢*.....30%
Allitn Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail....℔ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T. ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better..... ℔ ft. 3¾¢
Standard..... ℔ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ℔ ft., 2½ x ⅝, 15¢; 3½ x ⅝, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ℔ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1¼ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $2.75

### Rakes—

*Net Prices, Malleable Rakes:*

| | 10 | 12 | 14 16-tooth |
|---|---|---|---|
| *Shank* | $1.50 | 1.60 | 1.75 1.85 |
| *Socket* | $1.65 | 1.80 | 1.95 2.10 |

*Steel, Garden and Gravel, Aug. 1, '99, List*.....70%
*Malleable Iron, Garden*...70&10%
*Lawn Rakes, M't'l Head, per doz.*
*20 teeth*.....$3.25@3.50
*24 teeth*.....$3.50@3.75
Weldless Steel Garden.....75&5%
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $3.60
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.88
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5@70&10&5%
McCaffrey's American St'd..60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—

Borasic.....60%
Fox Razors, No. 42..℔ doz. $20.00
Fox Razors, No. 44..℔ doz. $20.00
Fox Razors, No. 82, Platina... ℔ doz. $25.00
} 40% Dis.
Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

### Safety Razors—

Silberstein.....40%

### Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¾, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*

*Black Jap*
*White Jap*
*Bronzed*
*Nickel Plated*
*Electro Plated*
} 75&10@80%

### Revolvers—

*Single Action*.....85@90¢
*Double Action, except 44 cal*..$1.90
*Double Action, 44 caliber*....$2.05
*Automatic*.....$3.60
*Hammerless*.....$4.10

*NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.*

### Riddles, Hardware Grade

*16 in*.....*per doz. $2.25@$2.50*
*17 in*.....*per doz. $2.50@$2.75*
*18 in*.....*per doz. $2.75@$3.00*

### Rings and Ringers—

### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 *doz.* |
| *Copper* | $1.00 | 1.15 | 1.40 *doz.* |

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

### Hog Rings and Ringers—

*Hill's Rings, gro. boxes, $4.00@4.25*
*Hill's Ringers, Gray Iron*..... *doz. 50@55¢*
*Hill's Ringers, Malleable Iron*.. *doz. 70@75¢*
*Blair's Rings*...*per gro. $4.75@5.00*
*Blair's Ringers.per doz. $0.60@ .65*
*Brown's Rings*..*per gro. $5.00@5.25*
*Brown's Ringers.per doz. $0.65@ .70*

### Rivets and Burrs—

*Copper*.....60&5@60&10%
*Iron or Steel*.....75&5@75&10%

### Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....72¢
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible, No. 58.50%
Lag Screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

### Rope—

*Manila, 7-16 in. diam. and larger:*
*Mixed*.....lb. 9½@10½¢
*Pure*.....lb. 11½@12 ¢
*Manila, Hay, Hide and Bale Ropes, Medium and Coarse*.. *lb.* 9½@10½¢
*Sisal, 7-16 in. diam. and larger:*
*Mixed*.....lb. 7 @ 7½¢
*Pure*.....lb. 8½¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Mixed*.....lb. 7 ¢
*Pure*.....lb. 8½¢

*Sisal, Tarred, Medium Lath Yarn:*
*Mixed* ..... lb. 7 ¢
*Pure* ..... lb. 8½¢
*Cotton Rope:* Lb.
*Best, ¼-in. and larger*....15½¢
*Medium, ¼-in. and larger*.14½¢
*Common, ¼-in. and larger*.10½¢
*Jute Rope:*
*Thread No. 1, ¼-in. & up.*lb. 6 ¢
*Thread No. 2, ¼-in & up.*lb. 5½¢
*Wool Twine*.....lb. 5¼¢
Old Colony Manila Transmission Rope ..... ℔ lb 17½¢

### Wire Rope—

*Galvanized* ..... 47½@5%
*Plain* ..... 55&5%

### Ropes, Hammocks—

Covert Mfg. Co.:
Jute ..... 50&5%
Sisal ..... 35&5%
Covert Saddlery Works..... 60&5%

### Rules—

*Boxwood* ..... 60&10&10%
*Ivory* ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber..... 70%
Stanley R. & L. Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35@35&10&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

### Sash Balances—

See *Balance, Sash.*

### Sash Locks—

See *Locks, Sash.*

### Sash Weights—

See *Weights, Sash.*

### Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

### Saw Frames—

See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular ..... 50%
Band ..... 50&10@60%
Cross Cuts..... 35&5%
Mulay, Mill and Drag..... 50%
One-Man Saw..... 40%
Wood Saws..... 40%
Hand, Compass, &c..... 40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&5%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide..... 60%
Band, ¼ to 1¾..... 60%
Crosscuts ..... 50%
Narrow Crosscuts..... 55%
Mulay, Mill and Drag..... 50%
Framed Woodsaws..... 35%
Woodsaw Blades..... 35%
Woodsaw Rods..... 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination..... 30%
Compass, Key Hole, &c..... 25%
Butcher Saws and Blades..... 35%
C. E. Jennings & Co.'s:
Back Saws..... 25%
Butcher Saws..... 30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws..... 30%
Hand Saws..... 20&2½%
Wood Saw Blades..... 35%
Millers Falls:
Butcher Saws..... 15&10%
Bar Saw Blades..... 15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws..... 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts..... 40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws..... 50%
Back Saws..... 25@25&7½%
Butcher Saws..... 35@35&7½%
Hand Saws..... 25@25&7½%
Hand Saws, Bay State Brand..... 45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws.....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws..... 50%

### Hack Saws—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades..... 25%
Keystone ..... 40%
Hack Saw Frames..... 30%
Fitchburg File Works, The Best...25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180..... 40&7½%
Hack Saws, Nos. 175, 180, complete. 40&7½%
Goodell's Hack Saw Blades..... 40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades...35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades..... 35%
Diamond Hack Saw Frames..... 50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades..... 35%
Sterling Hack Saw Frames....30&10&5%

### Scroll—

Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete, $4.00..... 15&10%

### Scalers, Fish—

Covert's Saddlery Works..... 60&10%

### Scales—

*Family, Turnbull's*....50@50&10%
*Counter:*
*Hatch, Platform, ½ oz. to ¼ lbs.*.....doz. $5.50
*Two Platforms, ¼ oz. to 8 lbs.*.....doz. $16.00
*Union Platform, Plain.*$1.70@1.90
*Union Platform, Stpd.*$1.85@2.15
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Crocers' Trip Scales..... 50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2..... 60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables..... 50%
"The Standard" R. R. and Wagon.50%

### Scrapers—

*Box, 1 Handle*.....doz. $2.00@2.25
*Box, 2 Handle*.....doz. $2.60@2.85
*Ship*....*Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....30@30&10%
Chapin-Stephens Co., Box....50@50&10%

### Screens, Window and Frames—

Flyer Pattern Screens..60&5@60&5&2¼%
Maine Screen Frames.....40&10&5%
Perfection Screens.....60&5@60&5&2¼%
Phillips' Screen Frames.60&5@60&5&2¼%
See also *Doors.*

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼ .$3.50@3.75*
*Bench, W'd, Beech.doz. 30@30&5%*
*Hand, Wood*.....30@30&5%
R. Bliss Mfg. Co., Hand...30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

### Coach, Lag and Hand Rail—

*Lag, Common Point, list Oct. 1, '99*.....80@80&10%
*Coach and Lag, Gimlet Point, list Oct. 1, '99*..75&10&5@80&5%
*Hand Rail, list Jan. 1, '81*....70&10@75%

### Jack Screws—

*Standard List*.....75&10@80&5%
Millers Falls..... 50&10&10%
Millers Falls, Roller..... 50&10%
P., S. & W..... 50@50&5%
Sargent ..... 70&10%
Swett Iron Works.....75&10@80&5%

### Machine—

*List Jan. 1, '98:*
*Flat or Round Head, Iron*....50@50&10%
*Flat or Round Head, Brass*....50@50&10%

### Set and Cap—

*Set (Iron or Steel)*..80%
*Sq. Hd. Cap*.....75%
*Hex. Hd. Cap*.....75%
*Rd. or Fillister Hd. Cap*.....65%
} *Extra 10&5 often given.*

### Wood—

*List July 23, 1903.*
*Manufacturers' printed discounts:*
*Flat Head, Iron*....87½&10@..%
*Round Head, Iron*...85 &10@..%
*Flat Head, Brass*....85 &10@..%
*Round Head, Brass*..80 &10@..%
*Flat Head, Bronze*...77½&10@..%
*Round Head, Bronze.75 &10@..%*
*Drive Screws*.....87½&10%

### Scroll Saws—

See *Saws, Scroll.*

### Scythes—

*Per doz.*
*Prices announced for next season:*
*Clipper Pattern, Grass*.....$6.20
*Full Polished, Clipper*.....$6.75
*Grain*.....$8.00
*Clipper, Grain*.....$8.25
*Weed and Bush*.....$6.25

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets—Awl and Tool—

*Brad Awl and Tool Sets:*
*Wood Handle, 10 Awls*.....doz. $2.00@2.25
*Wood Handle, 14 Awls, 6 Tools*.....doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz. $10.00.....50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders ..... 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 .....30@30&10&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel..... ℔ doz sets $9.00

### Nail—

*Square*.....*per gro. $2.25@2.50*
*Round, Blk. and Pol., assorted.*.....*gro. $1.80@2.00*
*Octagon*.....*gro. $3.50@3.75*
Buck Bros..... 27½%
Cannon's Diamond Point, ℔ gro. $12..25%
Mayhew's ..... ℔ gro. $9.00
Snell's Cannon's Diamond Point.... ℔ gro. $7.20
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Springfield Mach. Screw Co.: Diamond Knurled Cup Pt. ℔ gro. $7.50

### Rivet—

*Regular list*.....75@75&10%

### Saw—

Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Bemis & Call Co.'s:
Cross Cut..... 30%
Plate ..... 20%
Disston's Star and Monarch..... 25%
Morrill's No. 1, $15.00..... 50%
Nos. 3 and 4, Cross Cut, $20.63....50%
No. 5, Mill, $30.00..... 50%
Nos. 10, 11, 95, $15.63..... 50%
No. 1 Old Style, $10.00..... 50%
Special, $16.25..... 50%
Giant Royal, Cross Cut..... ℔ doz. $8.50
Royal, Hand..... ℔ doz. $5.00
Taintor Positive..... ℔ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 30..... ℔ doz., net, $24.00

### Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

### Shaves, Spoke—

*Iron*.....*doz. $1.00@1.15*
*Wood*.....*doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.)..... 30@30&10&10%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2..... 50%

### Shears—

| *Cast Iron..* 7 | 8 | 9 in. | |
|---|---|---|---|
| *Best* ....$16.00 | 18.00 | 20.00 | *gro.* |
| *Good* ...$13.00 | 15.00 | 17.00 | *gro.* |
| *Cheap* .. $5.00 | 6.00 | 7.00 | *gro.* |

*Straight Trimmers, &c.:*
*Best quality, Jap*....70@70&10%
*Best quality, Nickel*..60@60&10%
*Fair quality, Jap*....80@80&5%
*Fair quality, Nickel*..75@75&10%
*Tailors' Shears*.....40@40&10%
Acme Cast Shears..... 40@40&5%
Heinisch's Tailor's Shears..... 10%
Wilkinson's Hedge, 1900 list..... 45%
Wilkinson's Branch, Lawn & Border.40%
Wilkinson's Sheep, 1900 list..... 50%

### Tinners' Snips—

*Steel Blades*.....20&5@20&10%
*Steel Laid Blades*.....40&10@50%
Forged Handles, Steel Blades, Berlin, 40@40&10%
Heinisch's Snips..... 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in..... 50%
Niagara Snips..... 40%
P., S. & W. Co..... 20%

### Pruning Shears and Tools

Cronk's Grape Shears..... 33⅓%
Cronk's Pruning Shears..... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape .....40&10@50%
Tree Pruners..... 75%
P., S. & W. Co..... 33⅓%

### Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50%
Patent Roller, Hatfield's, Sargent's list ..... 70&10%
Reading ..... 60%
R. & E. list..... 33⅓%
Wrightsville Hatfield Pattern..... 80%

### Sliding Shutter—

Reading list..... 45&20%
R. & E. list..... 33⅓%
Sargent's list..... 50&10%

### Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge..20%
Climax, Union, League, New Rival, 10 and 12 gauge..... 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge..... 33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

### Shells, Loaded—

*Loaded with Black Powder*..40%
*Loaded with Smokeless Powder, medium grade*.....40&5%
*Loaded with Smokeless Powder, high grade*.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass..... 50%
Comets, High Brass.....50&10&5%

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron*.....per keg $4.00
*Steel*.....per keg $3.75
Burden's, all sizes..... ℔ keg $3.90

### Shot—

*Drop, up to B, 25-lb. bag*....$1.65
*Drop, B and larger*..... *per 25-lb. bag, $1.90*
*Buck, 25-lb. bag*.....$1.90
*Chilled, 25-lb. bag*.....$1.90

### Shovels and Spades—

*Association List, Nov. 15, 1902*..40%

### Sieves and Sifters—

*Hunter's Imitation*..... *gro. $10.50@11.00*
*Hunter's Genuine*..... *per gro. $12.00@12.50*
Buffalo Metallic Blued, S. S. Co., ℔ gr.:

| 14&16 | 16&18 | 18&20 |
|---|---|---|
| $13.20 | $13.50 | $14.40 |

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00..... 20%

### Sieves, Seamless Metallic

| | —Per dozen.— | | | |
|---|---|---|---|---|
| *Mesh* ..... | 14 | 16 | 18 | 20 |
| *Iron Wire*.... | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire*.. | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested*....*doz. $0.90@0.95*
*Mesh 20, Nested*....*doz. $1.00@1.05*
*Mesh 24, Nested*....*doz. $1.30@1.40*

### Sinks, Cast Iron—

*Standard list*.....60@60&10%

*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron*.....80&10@80&10&10%
*Steel*.....40@40&10%

### Slates, School—

*Factory Shipments.*
*"D" Slates*.....50@50&10%
*Eureka, Unexcelled Noiseless*..60&5 tens
*Victor A, Noiseless*..... 60&4 tens &5%

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German*.....40@40&10%
Covert Mfg. Co.:
Derby ..... 30&5&2%
High Grade..... 45%
Jockey ..... 30&10%
Trojan ..... 45%
Yankee ..... 30&5&2%
Yankee Roller..... 30&5&2%
Covert's Saddlery Works:
Crown ..... 60%
German ..... 60%
Model ..... 60%
Triumph ..... 60%
Oneida Community:
Solid Swivel..... 60%
Sargent's Patent Guarded....66%&10%

### Snaths—

*Scythe*.....45&10%

### Snips, Tinners—See *Shears.*

### Spoons and Forks—Silver Plated—

*Good Quality*.....50&10@60&5%
*Cheap*.....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand..... 50&10%
Anchor, Rogers Brand..... 60%
Wm. Rogers & Son..... 60&10%

### Miscellaneous—

*German Silver*.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver..... 50%

### Tinned Iron—

*Teas*.....*per gro. 45@50¢*
*Tables*.....*per gro. $0.90@$1.00*

### Springs—Door—

Chicago (Coil)..... 40&10%
Gem (Coil)..... 20%
Pullman (Coil)..... 20%
Reliance (Coil)..... 40&10%
Star (Coil)..... 30%
Torrey's Rod, 39 in..... ℔ doz. $1.10
Victor (Coil)..... 50&10&10%

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | *Per lb.* |
|---|---|
| *Black* | *4@4¼¢* |
| *Half Bright* | *4@4¼¢* |
| *Bright* | *4½@4¾¢* |

*Painted Seat Springs:*
*1¼ x 2 x 26*.....*per pr. 42¢*
*1¼ x 3 x 28*.....*per pr. 70¢*

### Sprinklers, Lawn—

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24..... 30%

### Squares—

*Nickel plated*.. } *List Jan. 5, 1900.*
*Steel and Iron*. } 70&10@75&10%
*Rosewood Hdl. Try Square and T-Bevels*.....60&10&10@70%
*Iron Hdl. Try Squares and T-Bevels*.....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter..... 40&10@40&10&10%

### Squeezers, Lemon

*Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.*
*Wood, Porcelain Lined:*
*Cheap*.....*doz. $1.00*
*Good Grade*.....*doz. $1.25*
*Tinned Iron*.....*doz. $0.75@1.25*
*Iron, Porcelain Lined*...*doz. $1.75*

### Staples—

*Barbed Blind*.....*lb. 6@6½¢*
*Electricians', Association list*..80&10&10&10%
*Fence Staples, Plain, $2.25; Galvanized*.....*$2.55*
*Poultry Netting Staples*..... *per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list..80&10%

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros..... 30%
C. & A. Hoffmann's..... 10%

### Steelyards—....30@30&10%

### Stocks and Dies—

*Blacksmiths'*.....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates..... 25%
Gardner Die Stocks No. 1..... 50%
Gardner Die Stocks, larger sizes....40%
Green River..... 25%
Lightning Screw Plate..... 25%
Little Giant..... 25%
Reece's New Screw Plates..... 25%

### Stone—Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $3.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots..... ℔ gro. $9.00
One gross or more..... ℔ gro. $7.20
Lots of 10 gross or more... ℔ gro. $6.00

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.00
Green Mountain S. S., ℔ gro. $6.00
Extra Indian Pond S.S., ℔ gro. $7.50
No. 1 Indian Pond S.S., ℔ gro. $7.00
No. 2 Indian Pond S.S., ℔ gro. $4.50
Leader Red End S. S., ℔ gro. $4.50
Emery and Corundum, 10 in., ℔ gro. $9.00
Pure Corundum, 10 in., ℔ gro. $12
Crescent ..... $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓% — 33⅓%

## Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit..50%
Gem Corundum Axe, Single or Double Grit..... 55%
Gem Corundum Slips..... 55%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1901 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in..60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips..... 90¢
Rosy Red Slips..... 90¢
Washita Slips, Extra..... 80¢
Washita Slips, No. 1..... 70¢
Washita Slips, No. 2..... 40¢ — 33⅓%
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%
Hindostan No. 1, R'g'lar.℔ lb 8¢
Hindostan No. 1, Small..℔ lb 10¢
Axe Stones (all kinds).....
Turkey Oil Stones, Extra, 5 to 9 in.....℔ lb 80¢ — 33⅓%
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips..... 40¢
Sand Stone..... 6¢
Belgian, German and Swaty Razor Hones ..... 50%
Natural Grit Carving Knife Hones .....℔ doz. $3.00
Quick Edge Pocket Knife Hones .....℔ doz. $2.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50 — 40%

## Stoners, Cherry—

Enterprise ..... 25@30%

## Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9.00

## Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00..... 50%
Morrill's, No. 2, $12.50..... 50%

## Door—

Chapin-Stephens Co.....60@60&10%

## Plane—

Chapin-Stephens Co..... 20%

## Straps— Box—

Cary's Universal, case lots..20&10&10%

## Hame—

Covert's Saddlery Works.....60&10%

## Stretchers, Carpet—

*Cast Iron, St'l Points, doz. 55@60%*
*Socket ..... doz. $1.75*
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00.....20%

## Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%

## Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Auditorium, Roller Bearing (26 in. case), Nickel..... $54.00
Mammoth, Roller Bearing (30 in. case), Nickel..... $60.00
Marion, Roller Bearing, regular finishes, full Nickel..... $24.00
Marion Queen, Roller Bearing, full Nickel ..... $24.00
Monarch, Roller Bearing, N'kel.$22.00
Monarch, Roller B'r'g, Jap'ned.$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel..... $36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel..... $36.00
Monarch Extra, Roller Bearing (17-in. case), Japanned..... $33.00
National Queen, Fancy Veneers.$27.00
Perpetual, Regular B'r'gs, Nkl..$20.00
Perpetual, Regular B'r'gs, Jap..$18.00

*NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots*

## Tacks, Brads, &c.—

*List Jan. 15, '99.*
*Carpet Tacks..... 90&30&10@.. %*
*American Cut Tacks..90&25@.. %*
*Swedes Cut Tacks.90&30&10&5@.. %*
*Swedes Upholsterers' Tacks .... 90&45&10&5@.. %*
*Gimp Tacks..... 90&45&10@.. %*
*Lace Tacks..... 90&45&10@.. %*
*Trimmers' Tacks.90&30&10&5@.. %*
*Looking Glass Tacks.70&10&5@.. %*
*Bill Posters' and Railroad Tacks ..... 90&45&10@.. %*
*Hungarian Nails....80&30&5@.. %*
*Common and Patent Brads... 80&10&5@.. %*
*Trunk and Clout Nails.80&10@.. %*

*NOTE.—The above prices are for Straight Weights,* An extra 5% is given on Star Weights** and an extra 10&5% on Standard Weights.****

## Miscellaneous—

*Double Pointed Tacks..... 90&6 or 7 tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list ..... 50&10@60%
See also Nails, Wire.

## Tanks, Oil—

| | Each. |
|---|---|
| Emerald, S., S. & Co. | 30-gal. $3.40 |
| Emerald, S., S. & Co. | 60-gal. $4.25 |
| Queen City, S., S. & Co. | 30-gal. $3.65 |
| Queen City, S., S. & Co. | 60-gal. $4.50 |

## Tapes, Measuring—

*American Asses' Skin..40&10@50%*
*Patent Leather..... 25@30&5%*
*Steel ..... 40@40&10%*
*Chesterman's ..... 25@25&5%*
Eddy Asses' Skin..... 40&10@50%
Eddy Patent Leather..... 25@30&5%
Eddy Steel..... 40@40&10%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1903..... 35%
Lufkin's Steel..... 33⅓@35%
Lufkin's Metallic..... 30@30&5%

## Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $3.00*

## Thermometers—

*Tin Case..... 80&10@80&10&5%*

## Ties, Bale—Steel Wire—

*Single Loop..... 80&2½%*
*Monitor, Cross Head, &c....70%*

## Brick Ties—

Niagara Brick Ties..... 25&10%

## Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

## Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

## Tools—Coopers'—

L. & I. J. White..... 20@20&5%

## Hay—

Myers' Hay Tools..... 50%
Stowell's Hay Carriers..... 50%
Stowell's Hay Forks..... 50%
Stowell's Fork Pulleys..... 50%

## Saw—

Atkins' Cross Cut Saw Tools..... 40%
Simonds' Improved..... 33⅓%
Simonds' Crescent..... 25%

## Ship—

L. & I. J. White..... 25%

## Transom Lifters—

See *Lifters, Transom.*

## Traps—Fly—

*Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00*
*Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50*

## Game—

*Oneida Pattern...75&10@75&10&5%*
Newhouse ..... 45@45&5%
Hawley & Norton..... 65@65&5%
Victor (Oneida Pattern)..... 75@75&5%
O. C. Jump (Blake Pat.)...60&5@60&10%

## Mouse and Rat—

*Mouse, Wood, Choker, doz. holes 8½@9¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.12½; ℔ doz. $12.00
No. 3, Rat, ℔ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ℔ doz. $4.75; case of 72 ℔ gro. $4.80
No. 4, Mouse, ℔ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ℔ doz. $2.75; case of 150 $2.25 doz.

## Trimmers, Spoke—

Wood's E I..... 50%

## Trowels—

Disston Brick and Pointing..... 30%
Disston Plastering..... 25%
Disston "Standard Brand" and Garden Trowels..... 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering..... 25&5%
Woodrough & McParlin, Plastering.25%

## Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ..... ℔ doz. $18.50
McKinney Trucks..... each $10.00
Model Stove Trucks..... ℔ doz. $18.50

## Tubs, Wash—

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Galvanized, per doz.* | *$4.75* | *5.25* | *6.00* |
| Galvanized Wash Tubs (S., S. & Co.): No. | 1 | 2 | 3 |
| Per doz., net. | $5.70 | 6.30 | 7.20 |

| No. | 1 | 2 | 3 | 10 | 20 | 30 |
|---|---|---|---|---|---|---|
| Per doz., net. | $5.70 | 6.30 | 7.20 | 6.00 | 7.20 | 8.10 |

## Twine, Miscellaneous—

| *Flax Twine:* | *BC.* | *B.* |
|---|---|---|
| *No. 9, ¼ and ½-lb. Balls* | *.22@24¢* | |
| *No. 12, ¼ and ½-lb. Balls* | *.18@20¢* | |
| *No. 18, ¼ and ½-lb. Balls* | *.16@18¢* | |
| *No. 24, ¼ and ½-lb. Balls* | *.16@18¢* | |
| *No. 36, ¼ and ½-lb. Balls* | *.15@17¢* | |
| *Chalk Line, Cotton ½-lb. Balls* | *.30¢* | |
| *Cotton Mops, 6, 9, 12 and 15 lb. to doz.* | *.9@11¢* | |
| *Cotton Wrapping, 5 Balls to lb., according to quality...* | *13½@20¢* | |
| *American 2-Ply Hemp, ¼ and ½-lb. Balls* | *.13@14¢* | |
| *American 3-Ply Hemp, 1-lb. Balls* | *.13@14¢* | |
| *India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)* | *.8¢* | |
| *India 3-Ply Hemp, 1-lb. Balls..* | *7@8¢* | |
| *India 3-Ply Hemp, 1½-lb. Balls.* | *6@7¢* | |
| *2, 3, ¼ and 5-Ply Jute, ½-lb. Balls* | *.9@10¢* | |
| *Mason Line, Linen, ½-lb. Bls.* | *.46¢* | |
| *No. 26½ Mattress, ¼ and ½-lb. Balls* | *.37¢* | |
| *Wool, 3 to 6 ply* | *.5¾@6¢* | |

## Vises—

*Solid Box..... 50&10@60%*

## Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard ..... 40%
Amateur ..... 25%
Columbian Hdw. Co..... 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7..... $4.00
Fisher & Norris Double Screw..15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co..... 20@30%
Merrill's ..... 20%
Millers Falls..... 60&10%
Massey Vise Co.:
Clincher ..... 40%
Perfect ..... 20%
Lightning Grip..... 20%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Sargent's ..... 40%
Smith & Hemenway Co.:
Machinists' ..... 40%
Jewelers' ..... 33⅓%
Snediker's X. L..... 33⅓%
Stephens' ..... 33⅓%

## Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30..... 25%
Perfection Saw Clamps, ℔ doz....$5.00
Reading ..... 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3..... 45&50%

## Wood Workers—

Massey Vise Co.:
Lightning Grip..... 15%
Perfect ..... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

## Miscellaneous—

Bignall & Keeler Combination Pipe Vise ..... 60&10%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series..... 60%
187 Series..... 60&5%
No. 870..... 40%

## Wads—*Price per M.*

| | | |
|---|---|---|
| *B. E., 11 up* | *.60¢* | *Dis. 15%* |
| *B. E., 9 and 10* | *.70¢* | |
| *B. E., 8* | *.80¢* | |
| *B. E., 7* | *.80¢* | |
| *P. E., 11 up* | *.$1.00* | |
| *P. E., 9 and 10* | *.1.25* | |
| *P. E., 8* | *.1.50* | |
| *P. E., 7* | *.1.50* | |
| *Ely's B. E., 11 and larger.* | *$1.70@1.75* | |
| *Ely's P. E., 12 to 20* | *....$3.00@3.25* | |

## Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled ..... 55&10@60%*
*Ground ..... 60&10@65%*
*Plain or Unground..65&10@70%*
*Country Hollow Ware, per 100 lbs. ..... $2.50*
*White Enameled Ware:*
*Maslin Kettles..... 70%*
*Covered Wares*
*Tinned and Turned..... 40%*
*Enameled ..... 50%*
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware..... 50&20%
Agate Nickel Steel Ware, Specials. 60&15%
Iron Clad Ware..... 70&10%
Lava, Enameled..... 40&10%
Never Break Enameled..... 50%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *.45¢* | *50¢* | *55¢* | *65¢* |

### Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles..... 60%

## Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

## Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$3.00
Red Star, family size, stationary protector ..... $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $2.65
Cable Cross, family size, stationary protector..... $2.90
Single Zinc Surface:
Nalad, family size, open back, perforated ..... $2.40
Saginaw Globe, protector, family size, ventilated back..... $2.25
Brass Surface:
Brass King, Single Surface, open back ..... $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface ..... $3.00
Glass Surface:
Glass King, Single Surface, open back ..... $3.00
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.00

## Washers—Leather, Axle—

*Solid ..... 80&10@80&10&10%*
*Patent ..... 90@90&5%*
*Coil: ⅞ 1 1⅛ 1¼ Inch. 11¢ 12¢ 13¢ 14¢ per box*

## Iron or Steel—

*Size bolt.... 5-16 ⅜ ½ ⅝ ¾*
*Washers ....$5.00 4.10 2.80 2.60 2.40*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

## Cast Washers—

*Over ½ inch, barrel lots..... per lb. 1¼@2¢*

## Wedges—

*Oil Finish..... lb. 2.15@2.30¢*

## Weights—Hitching—

Covert Mfg. Co..... 40&2%
Covert's Saddlery Works..... 60&10%

## Sash—

*Per ton, f.o.b. factory:*
*Eastern District. ...$22.50@24.00*
*Southern Territory..$18.00@19.00*
*Western and Central Districts market unsettled, prices ranging from $17.50@19.00*

## Wheels, Well—

*8-in., $1.50@1.55; 10-in., $1.65@ 1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.*

## Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9..... 80&5@80&7½%*
*10 to 18..... 80@80&5%*
*19 to 26..... 80&10@80&10&5%*
*27 to 36..... 80&5@80&10%*
*Galvanized:*
*6 to 9..... 77½@77½&5%*
*10 to 14..... 72½@72½&5%*
*15 to 16..... 75&7½@75&10&2½%*
*19 to 26..... 75&5@75&10%*
*27 to 36..... 72½&5@72&7½%*
*Coppered:*
*6 to 9..... 77½@77½&5%*
*10 to 14..... 77½@77½&7½%*
*15 to 18..... 75&10@75&10&2½%*
*19 to 26..... 75&10&5@80%*
*27 to 36..... 75@75&5%*
*Tinned:*
*6 to 14..... 77½@77½&7½%*
*15 to 18..... 75&5@75&10%*
*Annealed, Steel and Tinned, on Spools .. 70&10&10@70&10&10&10%*
*Brass and Copper on Spools... 60&10&10@60&10&10&10%*
*Brass, list Feb. 26, '96.... 30&5%*
*Copper, list Feb. 26, '96..... 15%*
*Cast Steel Wire..... 50%*
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

## Bright Wire Goods—

*List June 24, 1903. 90&10&10&10@.. %*

## Wire Cloth and Netting—

*Galvanized Wire Netting..... 80&10&5@80&10&10%*
*Painted Screen Cloth, 100 ft. $1.25*
*Standard Galv. Hardware Grade:*
*Nos. 2, 2½ & 3 Mesh, sq. ft..3 ¢*
*Nos. 4 and 5 Mesh, sq. ft..3¼ ¢*
*No. 6 Mesh, sq. ft..... 3½ ¢*
*No. 8 Mesh, sq. ft..... 4 ¢*

## Wire, Barb—See *Trade Report*

## Wrenches—

*Agricultural ....75&10@75&10&10%*
*Alligator or Crocodile..70&10@75%*
*Baxter Pattern S Wrenches.. 70&5@70&10%*
*Drop Forged S..... 45@45&5%*
Acme ..... 60&10%
Alligator Pattern..... 70%
Bull Dog..... 70%
Bemis & Call's:
Adjustable S..... 40%
Adjustable S Pipe..... 40%
Bemis Pipe..... 60%
Brigg's Pattern..... 40%
Combination Black..... 40&5%
Combination Bright..... 40%
Merrick's Pattern..... 40%
Boardman's ..... 33⅓%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' "Mechanics'"....40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle ..... 50&10%
Elgin Wrenches..... 40%
Elgin Monkey Wrench Pipe Jaws.33⅓%
Gem Pocket..... 30%
Hercules ..... 70%
W & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
Improved Pipe (W. & B.)..... 60%
Solid Handles, P., S. & W...50@50&5%
Stillson ..... 65%
Vulcan Chain..... 50%

## Wrought Goods—

*Staples, Hooks, &c., list March 17, '02..... 90@90&10%*

## Yokes, Neck—

Covert Saddlery Works, Trimmed..70%
Covert Saddlery Works, Neck Yoke Centers ..... 70%

## Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'..... list net

## Zinc—

*Sheet.....per 100 lbs. $6.65@6.90*

For the Table of "Current Metal Prices" see the First Issue of Every Month.